SHARP Service Manual

SG-450H
SG-450HB

APSS
Auto Program Search System

DOLBY SYSTEM ®

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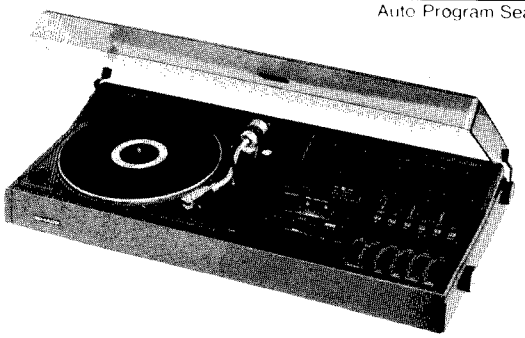
* Manufactured under licence from Dolby Laboratories.



MODEL
SG-450H
SG-450HB

In the interests of user-safety the set should be restored to its original condition and only parts identical to those specified be used.

SPECIFICATIONS

GENERAL

Circuit:	Receiver (LW/MW/SW/FM) 4-band superheterodyne stereo tuner-amplifier with FM multiplex circuit with cassette tape-deck and record player system
Power source:	AC 110/220/240V, 50Hz
Power consumption:	200W
Semiconductors:	13-Integrated Circuit 1-FET, 38-Transistors, 75-Diodes 7-LED
Dimensions:	847 (W) x 174 (H) x 395 (D) mm
Weight:	15kg

AUDIO SECTION

Music power output:	2 x 33W/4ohms Both channels driver
Continuous power output:	2 x 25W/4ohms Both channels driver
Frequency response:	30 ~ 20,000Hz
Channel separation:	48dB (1kHz)
Tone control:	Bass ± 10dB (100Hz) Treble ± 10dB (10kHz)
Input sensitivity and Input impedance:	
	Microphone . 1mV/10kohms
	REC/PB. . . . 300mV/47kohms
Output level and output impedance:	
	Speaker 4ohms
	Headphones . 8ohms
	REC/PB. . . . 30mV/100kohms

FM SECTION

Frequency coverage:	87.6 ~ 108MHz
Usable sensitivity:	1.88μV (40kHz deviation, S/N = 26dB)
S/N ratio:	60dB
Frequency response:	30Hz to 15kHz
IF rejection:	80dB
Image rejection:	50dB
Selectivity:	40dB (300kHz)
Capture ratio:	1.5dB

FM STEREO SECTION

Stereo Separation:	40dB
Distortion:	0.5%
19kHz rejection:	40dB
38kHz rejection:	40dB

AM SECTIOM

Frequency range:	LW. . . . . 150 ~ 370kHz
	MW. . . . . 520 ~ 1620kHz
	SW. . . . . 5.95 ~ 18MHz
Sensitivity:	LW. 200μV/m
	MW. 250μV/m
	SW. 63μV
IF rejection:	50dB (at 600kHz)
Image rejection:	46dB (at 1400kHz)

TAPE RECORDER SECTION

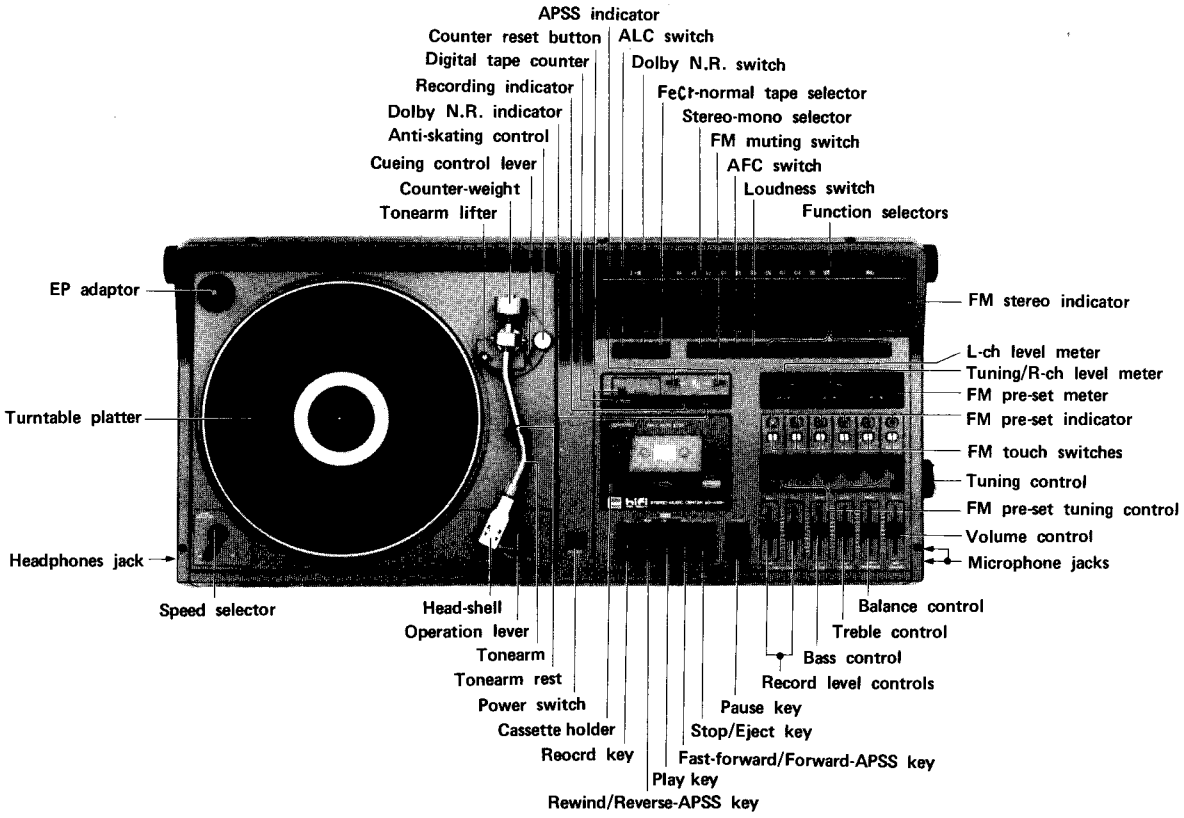
Type:	4-track 2-channel stereo cassette tape deck
Tape:	Philps standard compact cassette tape
Tape speed:	4.76 cm/sec.
Recording system and bias frequency:	AC bias (53.5kHz)
Erasing system:	AC erase (53.5kHz)
Track system:	4-track 2-channel
Frequency response:	30Hz ~ 15kHz (CrO_2 tape)
	30Hz ~ 15kHz (FeCr tape)
	30Hz ~ 14kHz (Normal tape)
S/N ratio:	52dB
Wow and Flutter:	0.2%
F.F or REW time:	100 sec. (Using C-60)
Channel separation:	25dB (1kHz)
Erase ratio:	60dB
Motor:	12V DC motor with electrical governa

RECORD PLAYER SECTION

System:	2-speed belt drive type
Motor:	4-pole synchronous motor
Speed:	33-1/3 or 45 r.p.m 2-speeds
Wow & Flutter:	0.15%
S/N ratio:	55dB
Cartridge:	Magnetic (IM)
Stylus pressure:	2.5g
Frequency characteristic:	20Hz ~ 15,000Hz

SHARP CORPORATION OSAKA, JAPAN

NAMES OF PARTS



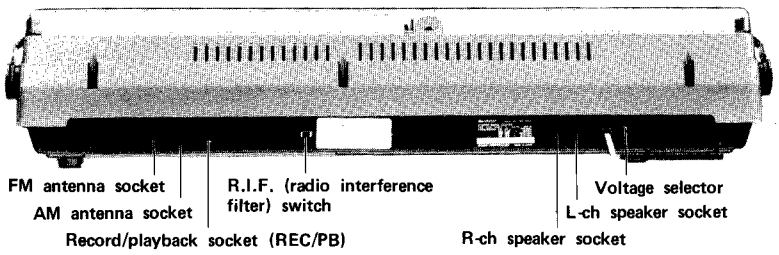


Figure 1

DISASSEMBLY

* Disconnect all leads connected to the back of the unit.
* Refer to Figure 3.

A DUST COVER REMOVAL

1. Fully open the dust cover.
2. Remove two (2) hings by moving the dust cover to the direction of arrow mark.

B PLAYER UNIT REMOVAL

1. Remove the turntable sheet.
2. The belt becomes visible on the motor pulley when the turntable is rotated: remove the belt. (Refer to Figure 2)
3. Remove the turntable and the screw retaining the player unit.
4. Lift up the player unit, and disconnect two (2) sockets (CNS51, CNS702)

C TOP CABINET REMOVAL

1. Remove the player unit as described in player unit removal.
2. Remove twelve (7) knobs (REC LEVEL/BASS/TREBLE/BALANCE/VOLUME/TUNING).
3. Remove nine (9) screws retaining the top cabinet.
4. Gently lift up the top cabinet.

D TAPE DECK UNIT REMOVAL

1. Remove the top cabinet as described in top cabinet removal.
2. Disconnect two (2) sockets (CNS301, CNS701) connected to the tuner switch P.W.B. and power P.W.B.
3. Remove seven (7) screws retaing the tape deck unit.
4. Gently lift up the tape deck unit.

E BOTTOM COVER REMOVAL

1. Remove two (2) screws retaining the bottom cover.

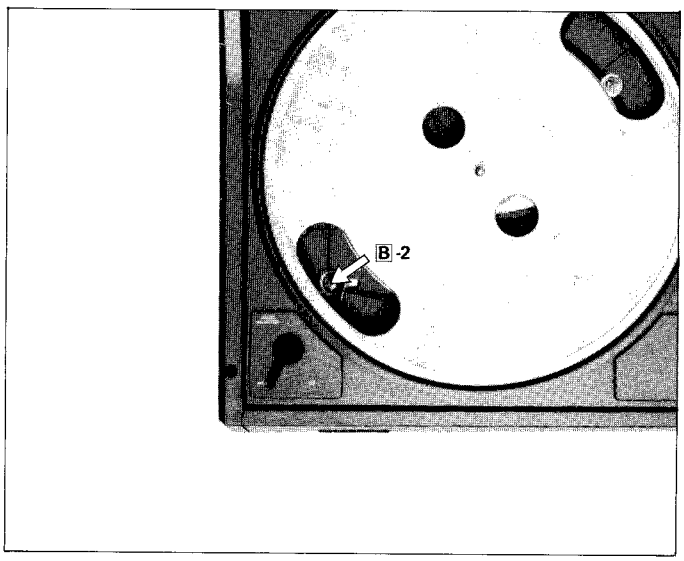


Figure 2

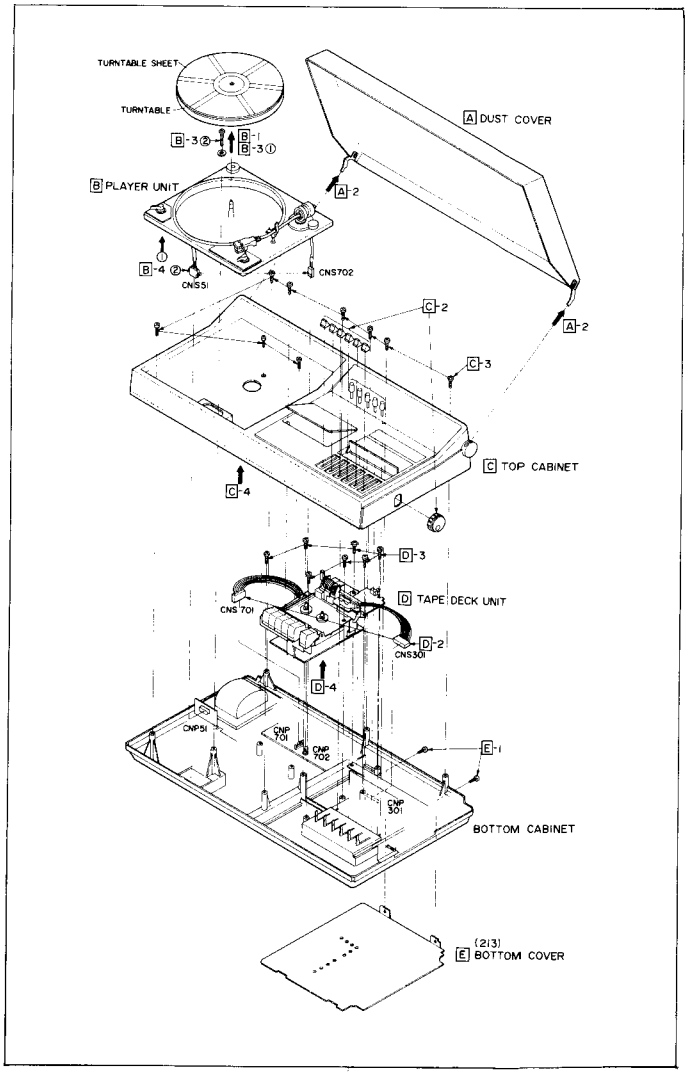


Figure 3

VOLTAGE SELECTION

- Before operating the unit on mains, check the pre-set voltage. If the voltage is different from your local voltage, adjust the voltage as follows: Rotate the plug of the voltage selector by using a screwdriver so that your local voltage number can be seen.
  (Refer to Figure 4)

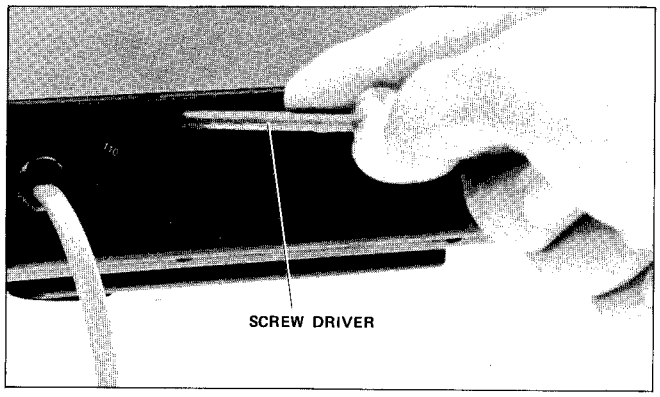


Figure 4

DIAL CORD STRINGING

(Refer to Figure 5)

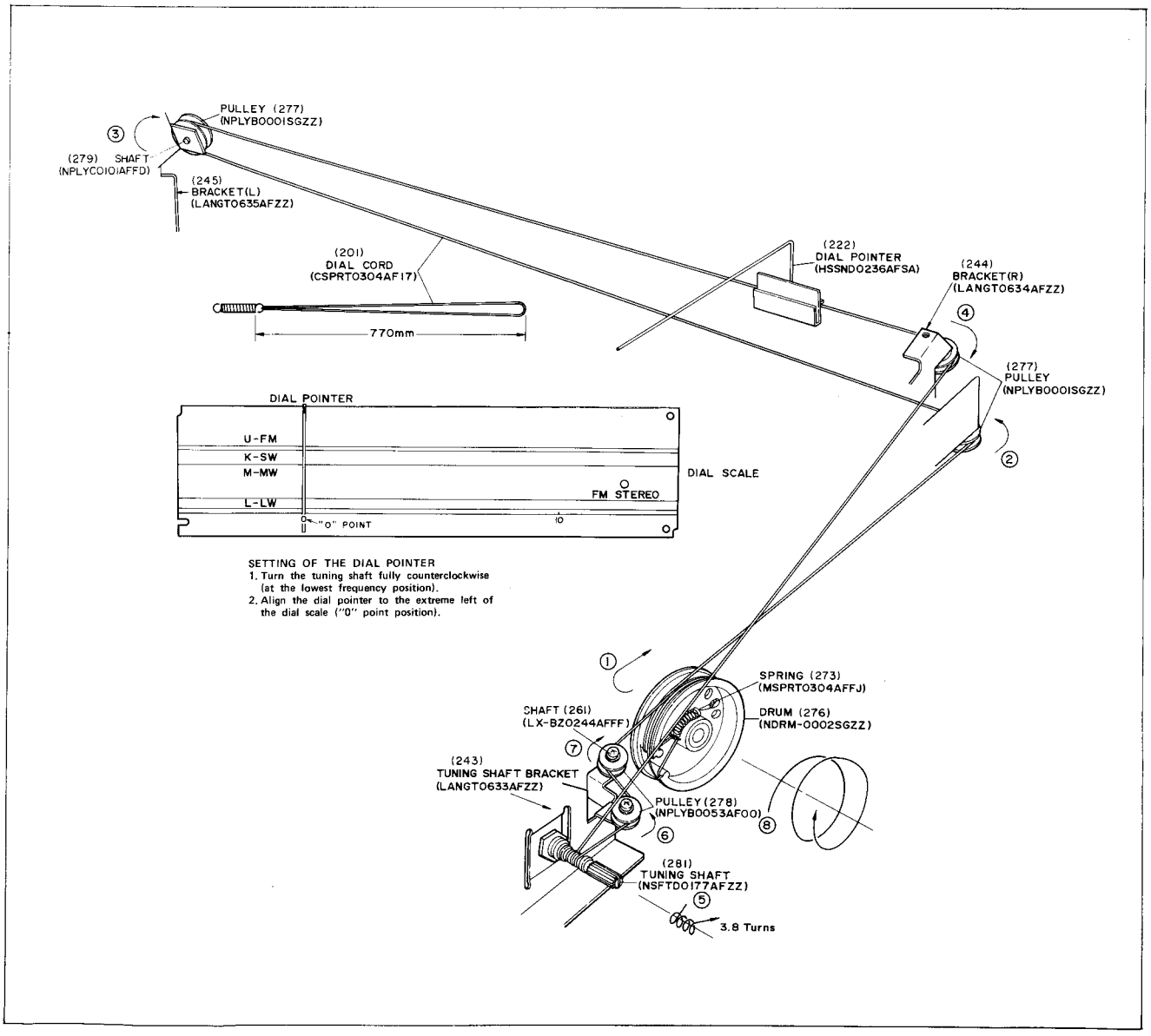


Figure 5

FUNCTION OF FULL AUTO STOP SYSTEM

This unit employs a system in which the Hall IC (IC501) detects a variation of magnetic field caused by the rotation of a magnet mounted on the counter shaft. While the magnet on the counter shaft rotates (in playback, record, fast forward and rewind modes), the Hall IC (IC501) is turned on and off alternately to produce pulses at its pin ③ and the pulses thus produced by the Hall IC (IC501) are rectified by the diode (D508) to charge a capacitor (C506) negatively.

As a result, the potential at the base of transister (Q504) reaches approx. −1.0 V, resulting in no operation of multivibrator consisting of transistors (Q504 and Q505).

On the other hand, when the rotation of magnet on the counter shaft is stopped (i.e. when the tape reaches its end in playback, record, fast forward and rewind modes), the Hall IC (IC501) is kept turned on (or off) continuously to produce no pulses so that the capacitor (C506) be stopped to be charged negatively.

This allows a current to flow through resistor (R510), causing capacitor (C506) to be charged positively. As a result, the potential at the base of transistor (Q504) exceeds 1.5 V, which actuates the multivibrator consisting of transistors (Q504 and Q505) to turn them on and off alternately and repeatedly. When Q504 is turned on, Q503 is turned on to allow a current to flow into solenoid (SOL 501).

As a result, the core of solenoid is attracted to put the mechanism in the stop mode. When the tape reaches its end in the APSS (Auto Program Search System) mode, the APSS key is unlocked due to the first attraction of solenoid and the play key is unlocked due to the second attraction, which put the mechanism in the stop mode.

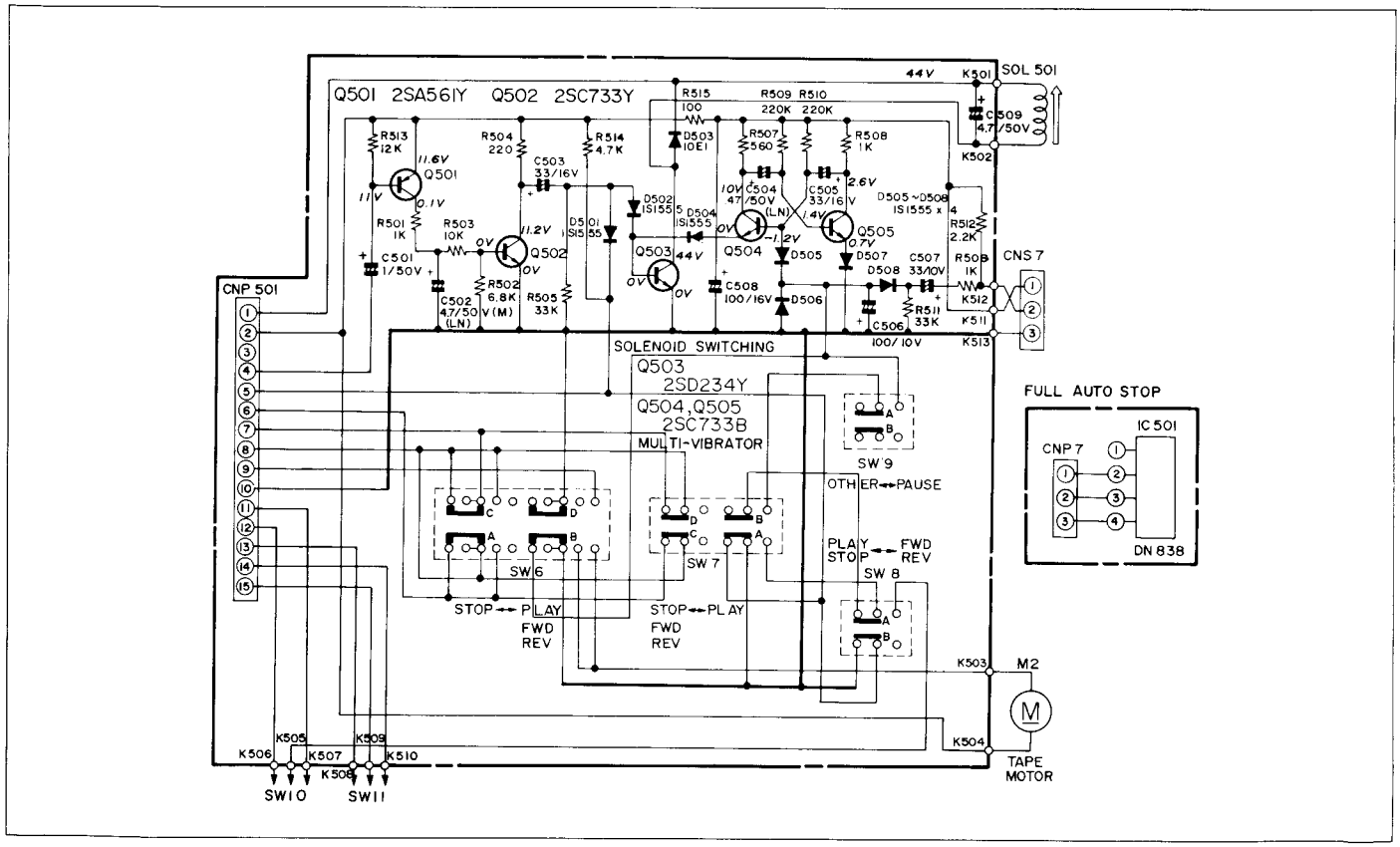


Figure 10

FUNCTION OF DOLBY SYSTEM

DOLBY NR SECTION

The amplifier circuits (A) and (B) are ordinary type. But the Dolby Summing (E) is an amplifier circuit that inverses only the polarity, having the gain of 1. Dolby Side Chain (F, C, D, G) is high-speed limiter that operate on high- or medium-frequency.

The Fig. 11 shows the input/output characteristic curve of the Dolby Side Chain circuit and the curve varies according to the change of frequency.

The frequency characteristic is as shown in Fig. 12 and it is the same as that of the high-pass filter of 6 dB/octave. The turnover frequency of the curve also varies according to the change of input level.

If the output signal from Dolby Side Chain circuit shown in Fig. 11 or 12 and ordinary signal from the amplifier circuit (B) are supplied to the Dolby Summing (E) circuit, these two signals are added to the each other in the record mode showing a compressor characteristic while they are substracted from the each other in play mode showing an expander characteristic – the input/output characteristic shown in Fig. 13 is obtained at Rec. Amp. terminal.

Dolby Side Chain Circuit

The characteristic of the high-pass filter of 6 dB/octave shown in Fig. 15 is obtained by that the composite impedances with C847 (848), C843 (844), C839 (840), R859 (860), R851 (852) and R853 (854), and the filter impedance are added to the each other to form an attenuator. The input/output characteristic in Fig. 12 is obtained by that DC voltage in proportion to the input is fed back to the attenuator (F). The circuit (C) increases the output of the attenuator to the specified voltage to supply the output to the Dolby Summing Circuit. The circuit (D, G) generates DC voltage and it also controls attack time and recovery time of the limiter.

Simultameously, AC signal is applied to DC voltage to become NF signal being fed to the circuit (F), in order to reduce the distortion. The Fig. 14 represents all the blocks composing of the Dolby Side Chain circuit and shows how they are operating.

Described as above, the Dolby NR circuit compounds linear signal and non-linear signal to produce compressor characteristic in record mode and expander characteristic in playback mode – if these two characteristics are mixed, an original linear characteristic is restored. Thus, noise is reduced because high-frequency signal is attenuated when it passes through the expander circuit.

Cautions on Repairing

1) The following parts out of those which are used for Dolby circuit P.W.B. should be at less than the error of ± 5%.
   R851, R852, R853, R854, R843, R844, R847, R848
   C847, C848, C843, C844, C839, C840, C845, C846
2) The following parts should be those with the error of within ± 10%.
   C829, C830, C831, C832

* If the following tapes are used under DOLBY NR mode, high-frequency may be lowered. BASF standard tape.

* If you repair the unit owned by an user who employs the tape of a particular brand, it is recommendable when servicing to use the same tape as used by the user.

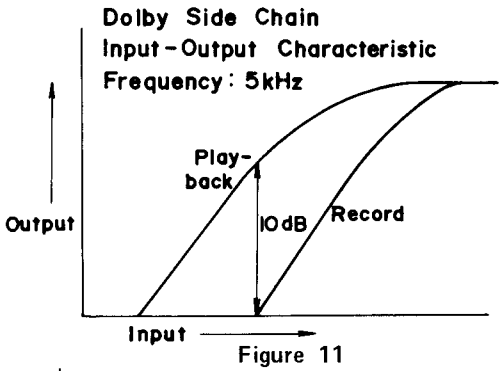


Figure 11

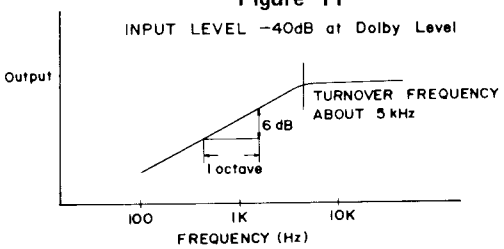


Figure 12

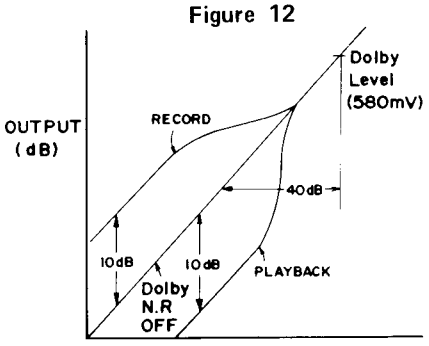


Figure 13

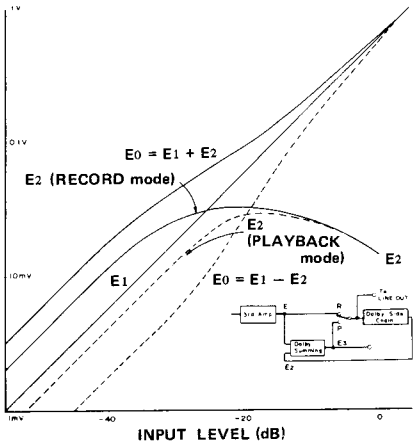


Figure 14

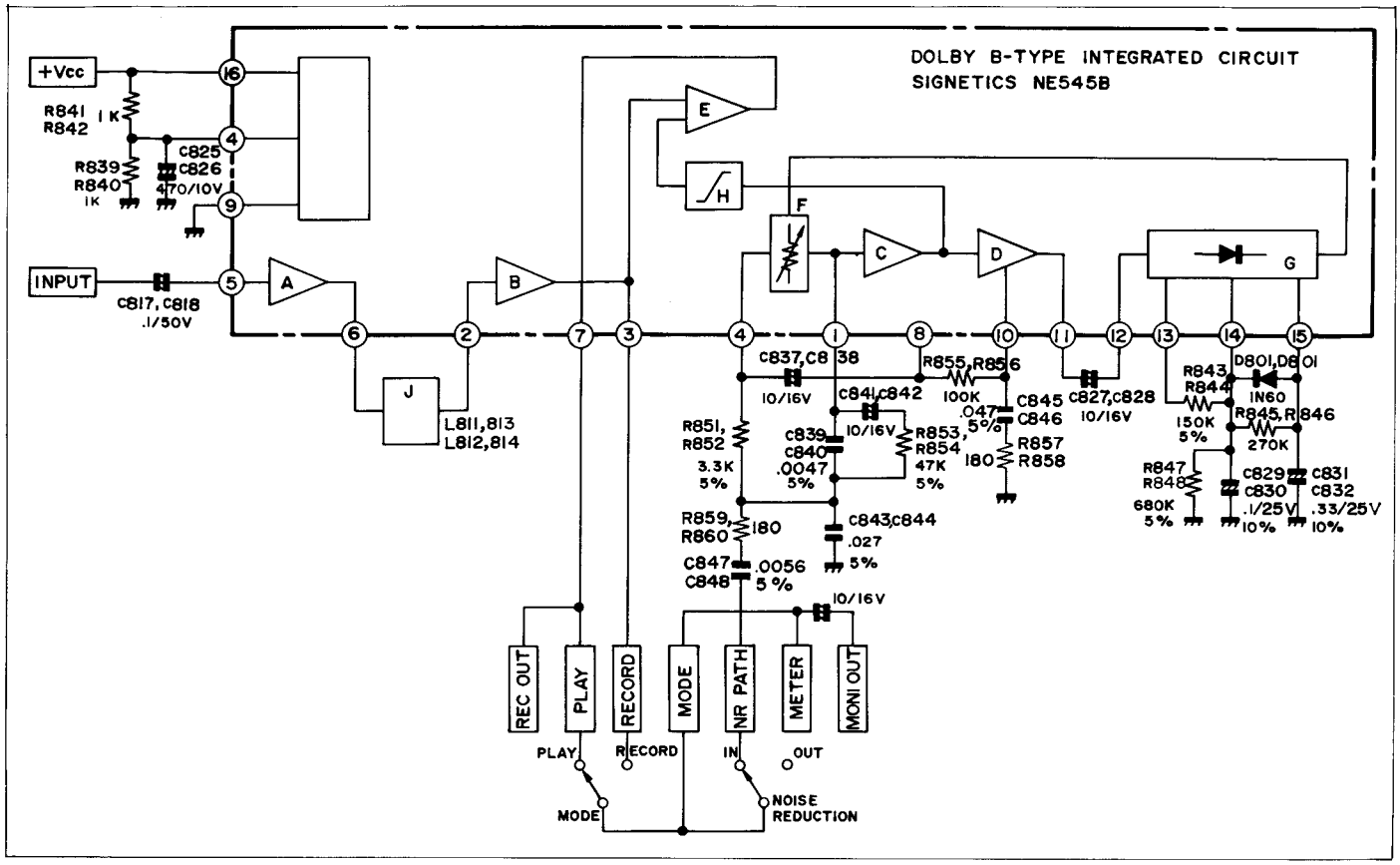


Figure 15

DESCRIPTION OF TUNER CIRCUIT

AM SECTION (Refer to Figure 16)

An AM signal enters the unit through ferrite bar antenna L109 (MW/LW) or SW antenna coil L303, and the signal fed to pin (1) of IC for AM, IC103, is amplified by IC103, and is fed to MIXER stage through pin (3) and T104. T104 serves to prevent IF frequency interference. AM IFT (T103) with ceramic filter serves as a load for MIXER. After converted to intermediate frequency by oscillation frequency fed from local OSC, Q301, the signal is amplified by IF amplifier and further detected through AM IFT coil T105. This IC incorporates meter drive output circuit pin (14) and AGC circuit.

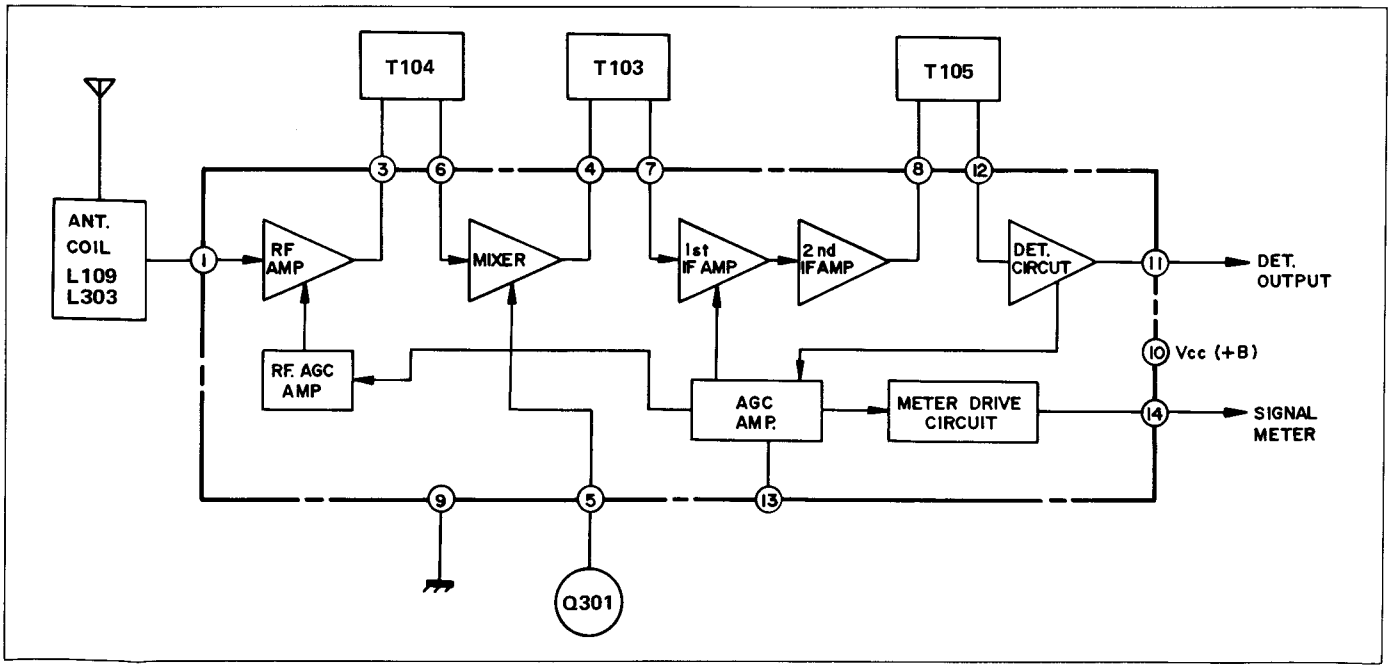


Figure 16 BLOCK DIAGRAM (IC103)

FM TUNER SECTION (Refer to Figure 17)

The tuner of this set is a preset tuner. In the preset tuner variable capacitive diode is used instead of variable capacitor. Variable capacitive diode is kind of diode, in which the stray capacity between its poles varies in accordance with DC voltage applied to the poles. Since the tuning knob is interlocked to the volume, when the tuning knob is operated the volume also operates to apply the voltage to the variable capacitive diode. The more the voltage applied to the variable capacitive diode D3 increases, the more the stray capacity between poles decreases. Local oscillation frequency depends upon oscillation coil L4 and stray capacity diode of D3 and when the voltage applied to D3 becomes smaller, stray capacity also becomes smaller, while oscillator capacity larger, Antenna tuning frequency and RF tuning frequency are determined as the above.

Like this, the preset tuner is so disigned that it selects the receiving frequency by applying DC voltage to D1 – D4. This tuner is provided with five preset tuning controls enabling preset tuning in addition to the manual tuning described above. The preset tuner is provided with five pieces of preset tuning controls whose knobs have LED's on the top center respectively. The knobs are touch preset knobs for selecting stations. If any of the knobs is touched, its LED light up, and preset tuning stands by, while turning the tuning knob corresponding to the concerned channel, tune in to desired station. RF signal received by balanced 300-ohm FM antenna is amplified at FET Q1, and is mixed in frequency by FM OSC of Q3, and Q2. The signal, coverted into 10.7 MHz IF signal, is fed to T1 of IFT. The frequency preset station is indicated on FM pre-set meter. In manual tuning, however, the needle of FM pre-set meter does not swing at all.

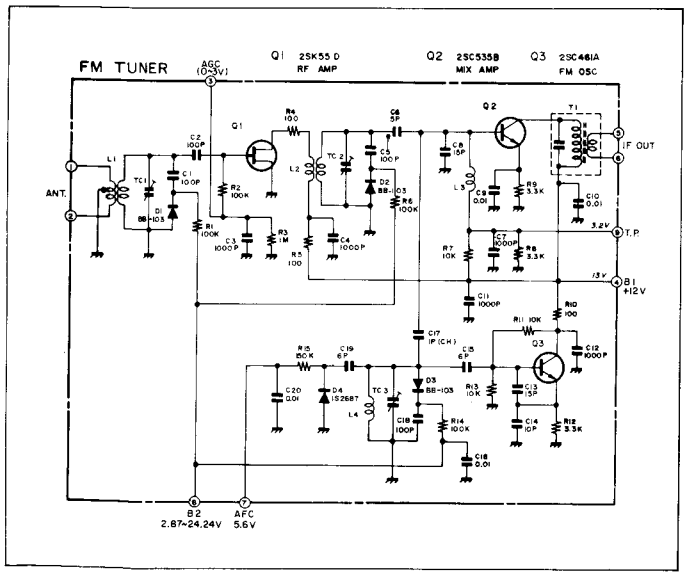


Figure 17

FM IF SECTION

Coming from the FM tuner, the IF signal is amplified by the Q101 and then passes through the ceramic filters CF-1 and CF-2. The IF signal is then amplified by the IC101 which consists of 3 stages differential amplifiers. This IC (IC101) can control AFC voltage, meter output voltage; forced monaural output and muting operation.

FM AGC SECTION

In FM AGC the output of Q101 is partially taken out, and is applied to Q1 gate after subjected to full-wave rectification by D101 and D102.

FM STEREO DEMODULATOR SECTION (IC102)

This set incorporates a stereo demodulator circuit that comprises IC's with the PLL (Phase Locked Loop) system applied. The PLL (Phase locked Loop) FM demodulator circuit is provided with such characteristecs as mentioned below.

In order to demodulated stereo composite signals, it is necessary to take a 19kHz pilot signal out of the stereo composite signals and to make it a 38kHz signal.

Most of the conventional methods to obtain such a 38kHz signal are frequency doubling ones which utilize anonlinearity of the elements. Compared with the conventional type, the recently developed IC-ed demodulator provides more sufficient separation effects. However, since it also requires 2 or 3 coils like the conventional one, if even one of them is dislocated from the initially adjusted point due to a secular change the separation effects will be deteriorated. Moreover there is such a contradiction that the more the efficiencies of the coils are increased enough to withstand the outer pluse signals like automobil ignition noises, the more the coils suffer secular changes.

To eliminate such disadvantages as above, PLL (Phase Locked Loop) system is employed in the method to make a 38kHz signal using a 19kHz pilot signal.

The PLL system stereo demodulator gives such three merits as:

1. Since the phases of a pilot signal and a 38 kHz signal are automatically made the same with each other, the deterioration of separation effect is strongly minimized.
2. Since only one of variable resistor, being newly employed, plays the role of 2 to 3 piece of convetional coils, troubles of the parts due to secular changes are decreased. In addition, even if this variable resistor is slightly dislocated, the separation effect will never be deteriarated because of the merit as mentioned in 1 by which the automatic phase adjustment is assured.
3. Compared with the conventional one, the PLL system demodulator shows a more noise withstanding characteristec since it has such performances as the selection of frequencies and the continuity of oscillation frequencies (short-time memory), thus assuring a stable stereo demodulation.

FM DETECTOR SECTION (Quadrature Detector Circuit)

This unit employs "Quadrature Detector" based on newly developed IC (Integrated Circuit), Which is substituted for ration detector and Foster-Seeley's detector that have been so far used. The basic structure of quadrature detector circuit is as shown in Fig. 18.

With this detection system, the multiplier quandrature detector circuit receives two types of input signals, one is the signal which has been amplified by the limiting amplifier and another which has passed through the phase shift circuit. (about $\pi/2$). Thus, the quadrature detector circuit produces demodulation signal.

The term "quadrature" is resulted from that the phase difference between these two signal is $\pi/2$. The multiplier consists of doubly balance circuit as shown in the following circuit drawing. Phase characteristic of the phase shift Circuits is as shown in Fig. 19.

This circuit is featured by:

(1) Good linearity and low distortion.

(2) Operates on small signal and less highter harmonics.

(3) Wide-band detection of as much as 1.5MHz.

Therefore, this ciucuit assures low distortion even with the overmodulation of more than 100% thereby reproducing high quality sound.

As to the detector circuit of SG-450H; L102 is phase shift coil and T101. T102 detection quadratuere coil. The output of detector circuit appears at the pin (6) of IC101 and is supplied to the pin (2) of IC102 (PLL MPX. demodulator).

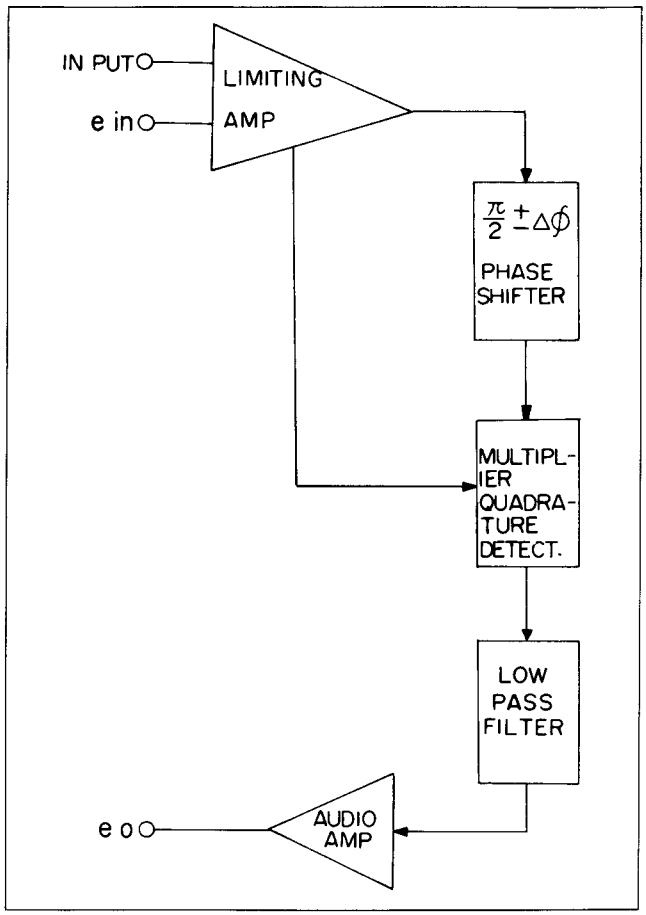


Figure 18

TOUCH CONTROL SECTION

The touch control section consists of two IC.s (IC401 & IC402), 12V and 24V power source, five pieces of preset controls and touch switch (U1 ~ U5) block, and the 24V power source uses ICnized Zener diode. If a key of touch block is lightly touched by a finger, small current flows into the fingertip to turn on LED and hold the preset station. When the touch knobs is touched, a voltage at pin (2) of IC401 rises from 3V to 4.5V. Thanks to such property the section can reduce unnecessary noise produced in changeover operation by muting FM IF circuit. IC402 is specially designed so that UI is in operation whenever the unit is turned ON.

As for details refer to "TOUCH IC SECTION (IC401, IC402)".

TOUCH IC SECTION (IC401, IC402)

■ The reason why any desired channel can be selected by touching one of the touch knobs (U1 to U5) (Refer to Figure 21).

As no current runs to pin (2) of IC402 on turning the unit on, the potential at the base of Q504 reaches 0 (zero). Consequently, there occurs such a string of actions as Q504 ON → Q506 OFF → Q507 ON → Q508 ON, and further, the following actions take place dut to voltage drop in R406; Q408 ON → Q409 ON → Q407 ON. This makes the potential at pin (2) positive, which causes voltage drop in R502 (= 62kΩ) to turn OFF the emitter of Q504 immediately. As a result, the following string of actions take place; Q506 ON → Q507 OFF →

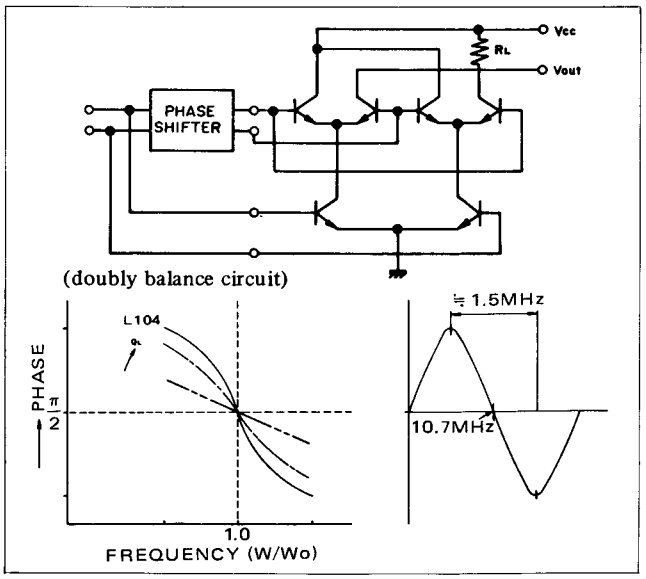


Figure 19

Q508 OFF. Here, R409 receives current enough to turn on Q408 because the resistance at pin (2) is set at small value, which keeps Q407 turned ON.

Q410, Q411 and Q412 are turned ON one after another to turn ON Q413 and Q414 serving as LED drive circuit. The current from Q414 flows into the LED touch plate through pin (9) to make the LED of U1 light up and turn ON Q415, turning output circuit.

Through the above-mentioned process the LED of U1 lights up on power supply, where potential at pin (2) is set in a pair.

Action of Q504 also prevents that all the memory are cleared due to misoperation. As long as no voltage is applied to pin (2), Q504 is immediately turned ON to turn on the LED of U1 as mentioned above.
As to IC401, as points ※1,※2 and※3 are not connected with each other, the circuit does not function. Therefore, any channels do not function even if the unit is turned ON.

■ The reason why the U1 (LED411) can light up when the power switch (SW5) is turned ON. (Refer to Figures 20 and 21).
[Operational explanation of changeover from U1 (in operation) to U2]
If preset knob "U2" is touched, preset terminal of U2, pin (12), is grounded through high resistance of fingertip, which causes the following actions; Q302 ON → Q303 ON. Q305 is turned OFF through Q304 which has been already conducted. Consequently, base potential of Q306 rises to turn it ON. A voltage of about 4.9V (a voltage developed at pin (2) with preset key touched) is applied to a resistance of pin (2) due to current passing through Q306. Due to this current and a voltage drop in R306 (= 1.9k), Q308 and thus Q309 are turned ON, and a voltage determined by R307, R308 and R309 is applied to the base of Q307. Here, this voltage is named V_{B307}.
Under such state a voltage at the emitter of Q407 for U4 is increased nearly to 4.9V, and therefore Q407 is turned OFF to change over the channel from U1 to U2.

At the final stage of changeover operation (immediately before the preset key is released from finger) the emitter potentials at Q306 and Q307 drop abruptly, but as Q307 receives a current of base voltage V_{B307} it is not turned off even if Q306 is turned OFF. As a result,

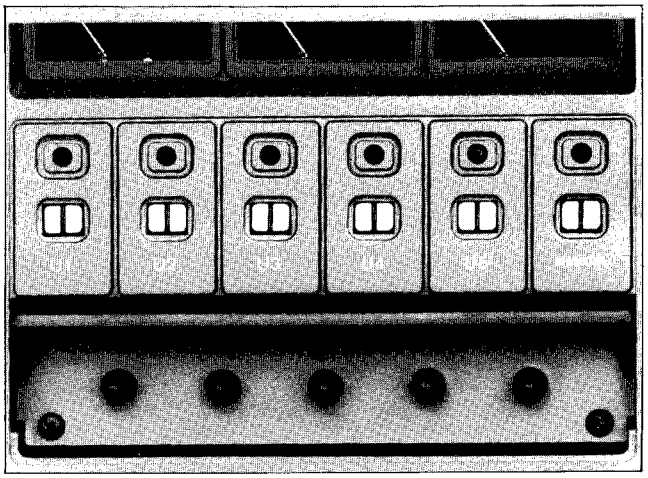


Figure 20

Q310 to Q315 are kept turned ON to retain U2. At this time the voltage applied to the resistor of pin (2) is stabilized at 3V (a voltage which is developed at pin (2) when U2 is retained).
When channel is further shifted, the above-mentioned action is repeated; the existing channel is cleared at 4.9V to put the next channel in operation instead, where the voltage at pin (2) reaches 3V.

■ The reason why the two channel selector IC-s (IC401 and IC402) are connected with other in parallel. (Refer to Figure 21)
Parallel connection of IC402 (1 pin) plus IC401 (plural) including the resistor at pin (2) provides four channels. If an IC402 is used, channel returns to U1 whenever the unit is turned ON, which provents misoperation securely. If only an IC401 is used, however, any channel is out of operation, resulting in misoperation.

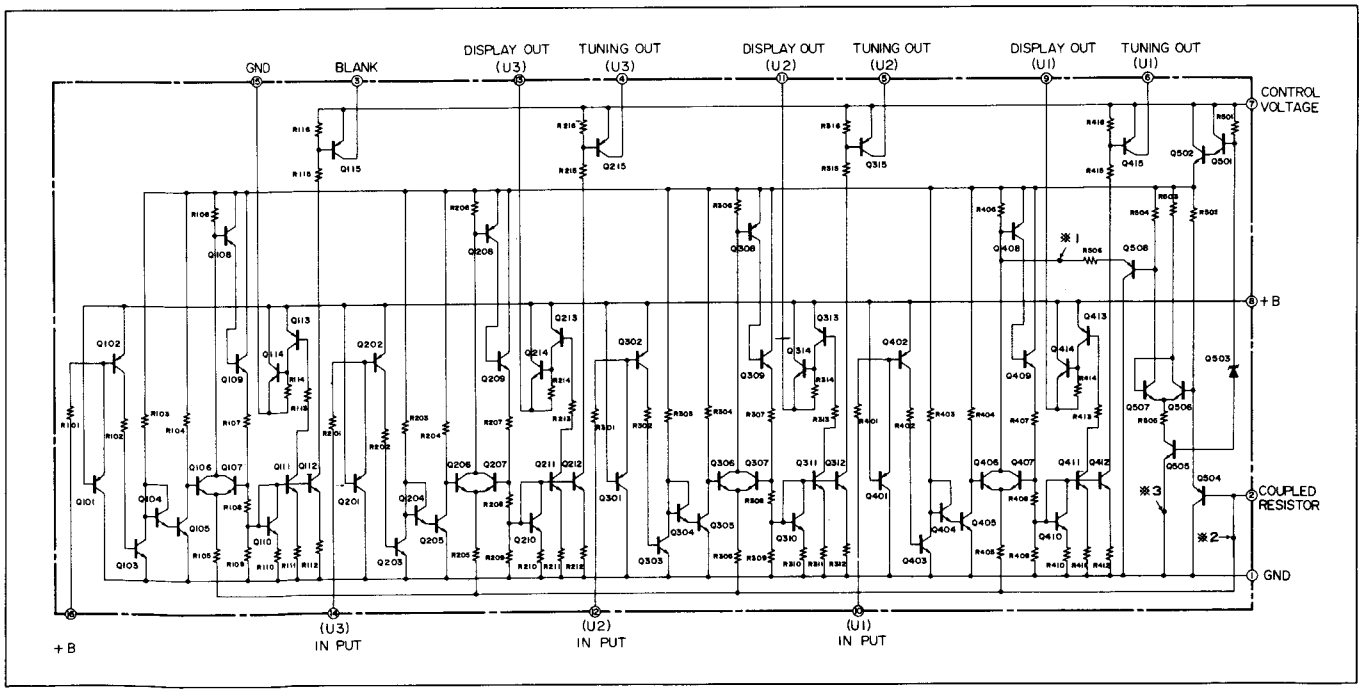


Figure 21

■ TORQUE CHECK

(Refer to Figure 26)

1. Set the torque measuring reel to the turntable (to the take-up side at playback or fast forward mode and to the supply side at rewind mode).
2. Then, rotate the reel in the same direction as for turntable and read the torque value when the pointer is stabilized.

Mode	Torque Value
Playback	35 – 60 gr. cm
Fast Forward	60 –100 gr. cm
Rewind	60 –100 gr. cm

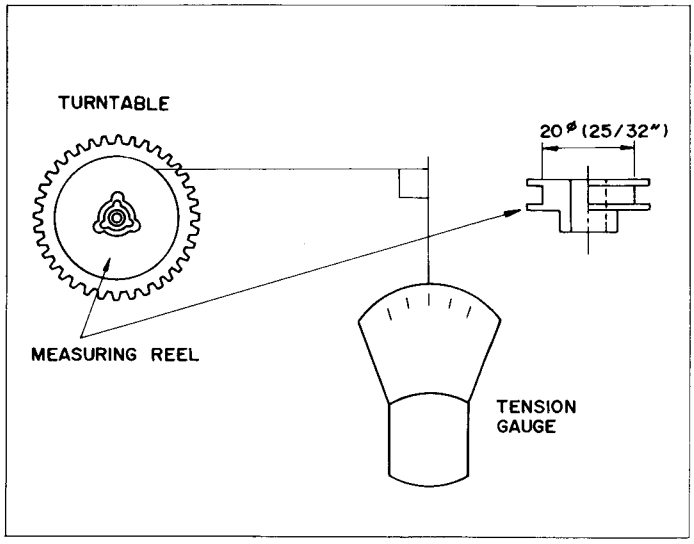


Figure 26

■ AUTO STOP SOLENOID SETTING POSITION ADJUSTMENT

(Refer to Figure 27)

Push the core of auto stop solenoid (SOL 501) and depress the play key.

At the time, adjust the screws retaining the auto stop solenoid so that the mechanism is changed to stop mode.

■ TAPE SPEED CHECK

(Refer to Figure 28)

1. Connect an 4ohm dummy resistor to the speakers socket (SO5 or SO6).
2. Connect a frequency counter across the 4ohm resistor.
3. Place the unit in a horizontal position and playback the test tape (TEAC MTT-111, 250 pWb/mm –10 dB, 3kHz).
4. Ensure that the frequency counter indicates within 3060Hz ~ 2970Hz.

If the tape speed is not within this range, clean the belt, flywheel, capstan, pinch roller and the other running parts. Check the torque of take-up turntable and pressure of the pressure roller. Neverthless good results can not be obtained, replace the motor.

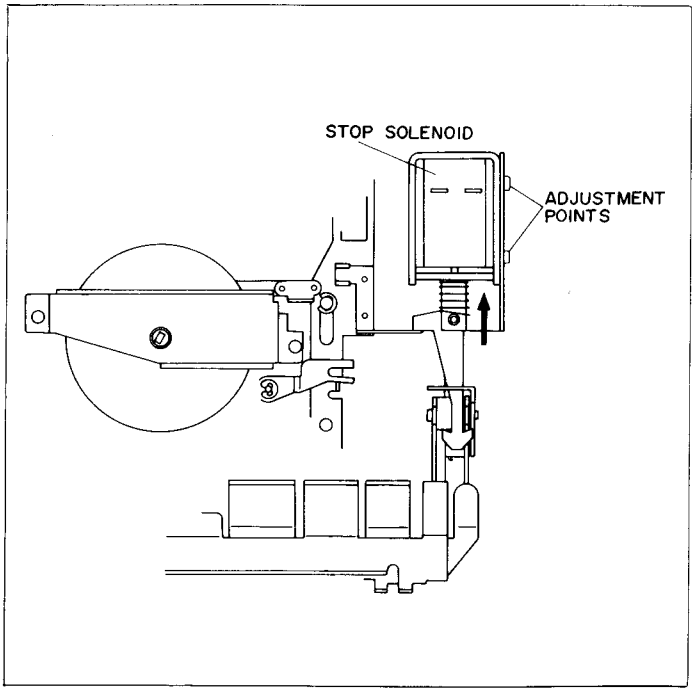


Figure 27

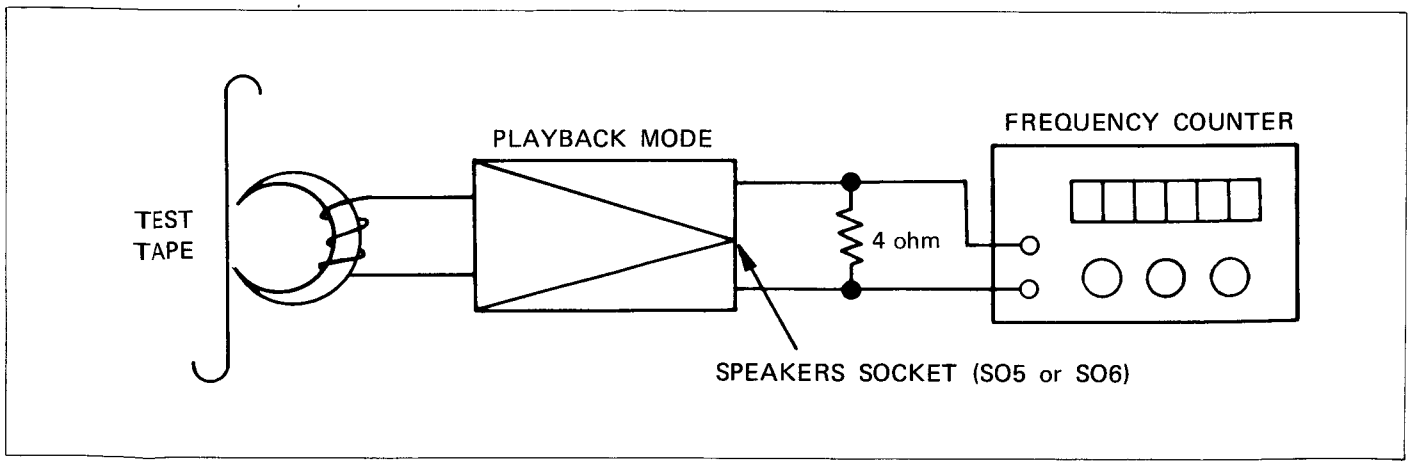


Figure 28

ELECTRICAL MEASUREMENT

* Set the FUNCTION switch (SW1) to the TAPE position.

■ RECORD/PLAYBACK HEAD AZIMUTH ADJUSTMENT

(Refer to Figure 29)

1. Connect load resistor (4ohm) to the speaker socket (SO5, SO6) and further connect the VTVM thereto.
2. Insert the test tape (MTT-114:10kHz, −10dB Recorded).
3. Set the Dolby N.R. switch (SW2-B) and Fe-Cr switch (SW2-A) to the OFF position.
4. Place the unit in PLAYBACK mode.
5. Adjust the head azimuth adjusting screw so that the playback output voltage becomes maximum in both channels.

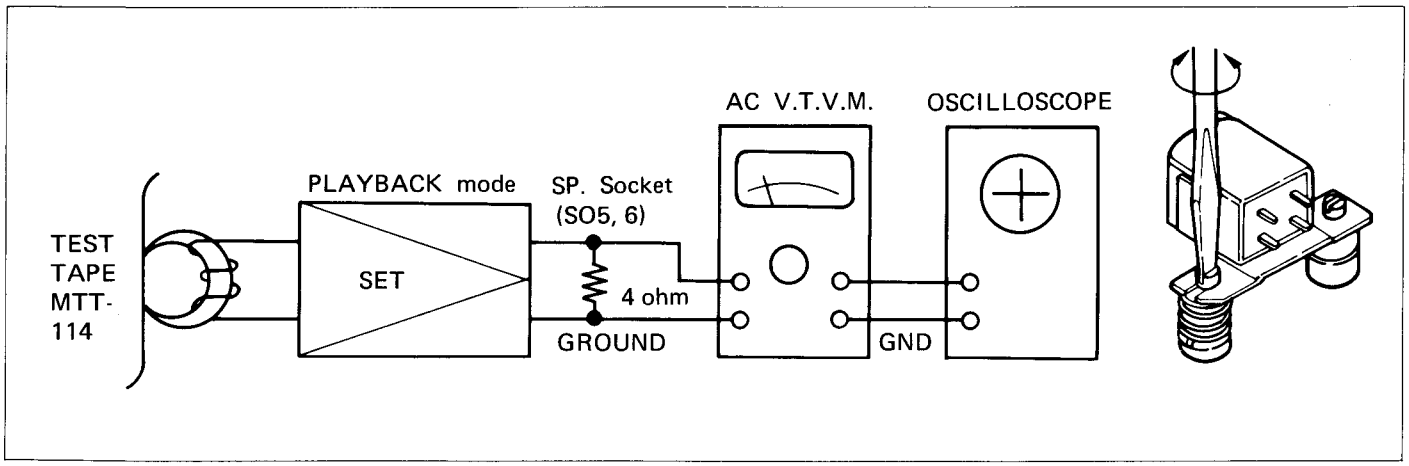


Figure 29

■ RECORD AMPLIFIER BIAS OSCILLATOR ADJUSTMENT

(Refer to Figures 22 and 30)

1. Connect the VTVM across the 100ohm resistor (R801, R802).
2. Set the auto tape selector switch (SW11) and Fe-Cr switch (SW2-A) to the NORMAL position.
3. Place the unit in RECORD mode.
4. Adjust the semi-variable resistor (VR811, VR812) so that the VTVM readings becomes 35mV.
   * Auto tape selector switch (SW11):CrO_2 position ⟶ 43 ~ 53mV.
   * Auto tape selector switch (SW11):Normal position Fe-Cr switch (SW2-A):ON position ⟶ 32 ~ 38mV.

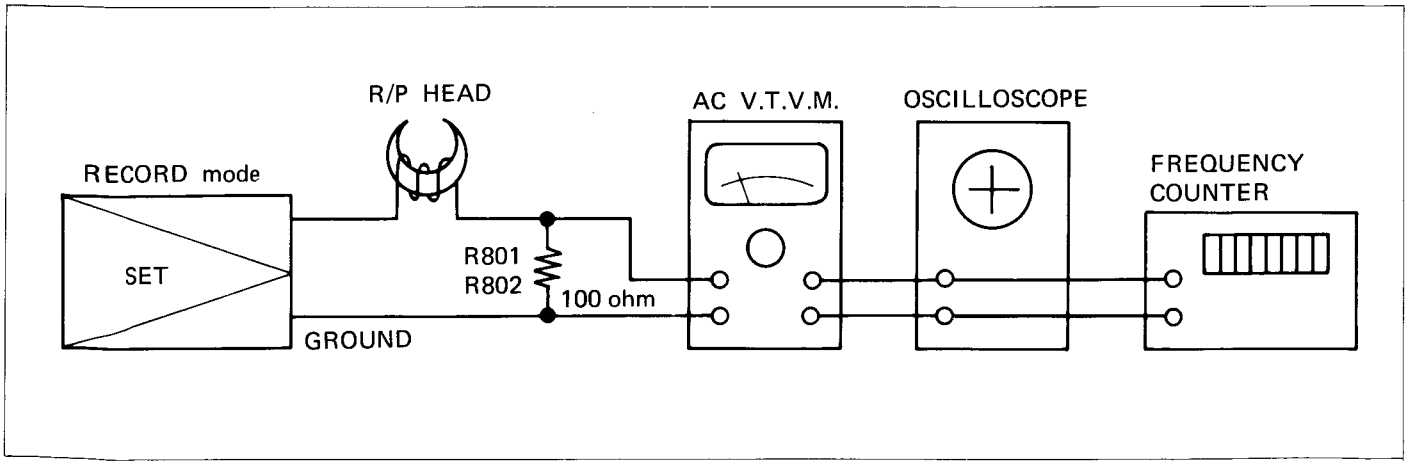


Figure 30

■ ERASE CURRENT CHECK

(Refer to Figures 22 and 31)

1. Connect the VTVM across the 1 ohm resistor (R930) (TP805 and TP804).
2. Set the auto tape selector switch (SW11) to the NORMAL position.
3. Place the unit in RECORD mode.
4. Make sure the erase current is 60 ~ 120 mV.
   * Auto tape selector switch (SW11) : CrO_2 position ⟶ 90 ~ 150 mV
5. Make sure the record oscillator bias frequency is 53.5 ± 4 kHz

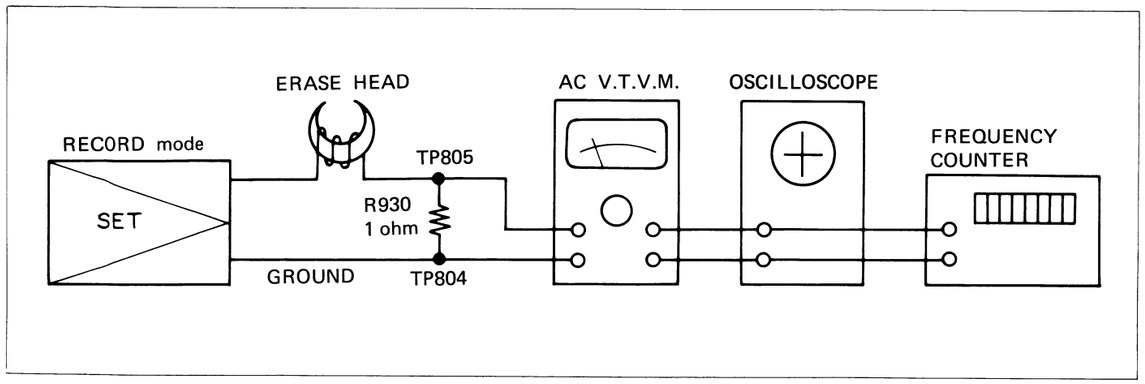
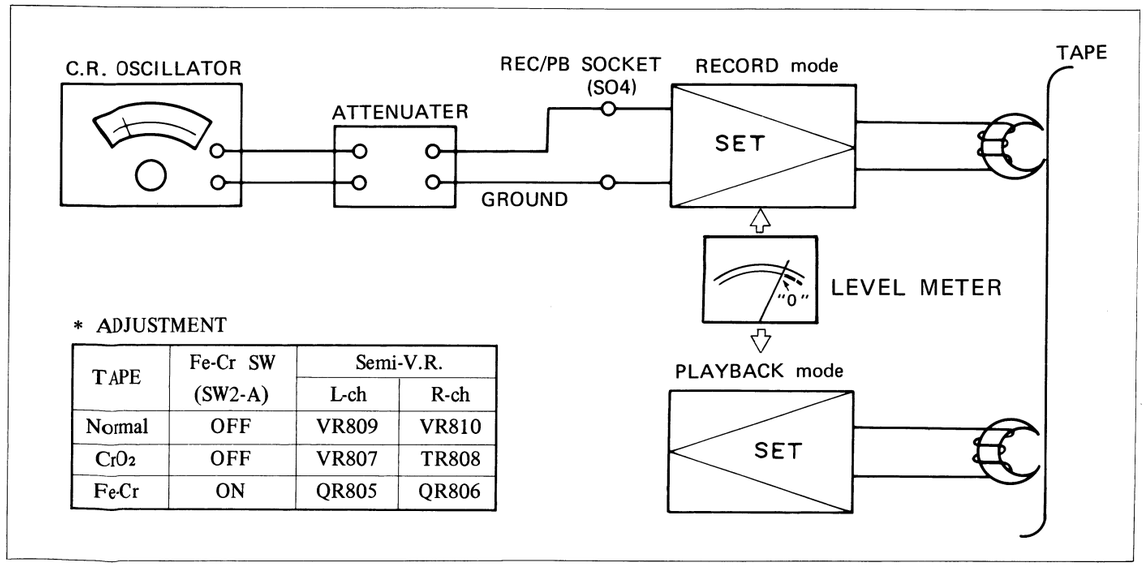


Figure 31

■ RECORD AND PLAYBACK SENSITIVITY ADJUSTMENT (Refer to Figures 22 and 32)

1. Insert the tape (non-recorded), and set the function switch (SW1) to the AUX/MIC position.
2. Connect the C.R. oscillator to the REC/PB socket (SO4) and apply signals (1 kHz, −10 dB) to the unit.
3. Place the unit in RECORD mode, and adjust the REC LEVEL control (VR601, VR602) so that the LEVEL meter indicates "0 VU".
4. Reproduce the tape which has been recorded at the step 2 above.
5. Adjust the * semi-variable resistor (VR805 ~ VR810) so that the LEVEL meter indicates "0 VU". (within ± 0.5 VU)



* ADJUSTMENT

TAPE	Fe-Cr SW (SW2-A)	Semi-V.R.	
		L-ch	R-ch
Normal	OFF	VR809	VR810
CrO_2	OFF	VR807	TR808
Fe-Cr	ON	QR805	QR806

Figure 32

■ PLAYBACK/LEVEL METER SENSITIVITY ADJUSTMENT (Refer to Figure 33)

1. Connect the V.T.V.M. to the test point TP801 (TP802) and test point TP803 (GROUND).
2. Insert the test tape (MTT-150, 400 Hz Recorded).
3. Set the Dolby N.R. switch (SW2B) and Fe-Cr switch (SW2-A) to the OFF position.
4. Place the unit in PLAYBACK mode.
5. Adjust the semi-variable resistor (VR801, VR802) so that the V.T.V.M. reads 580 mV.
6. At this time, adjust the semi-variable resistor (VR803, VR804) so that the LEVEL meter indicates "0 VU".

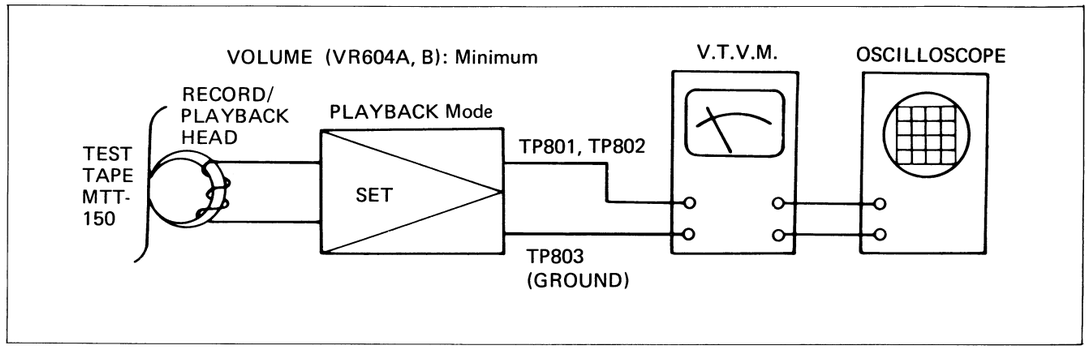


Figure 33

■ DOLBY NOISE REDUCTION CHECK

(Refer to Figure 34)

1. Connect the V.T.V.M. to the test point TP801 (TP802) and test point TP803 (GROUND).
2. Insert the tape (non-recorded)
3. Set the function switch (SW1) to the AUX/MIC position and the Dolby N.R. switch (SW2-B) to the OFF position.
4. Connect the C.R. oscillator to the REC/PB socket (SO4) and apply signals (100 Hz, −35 dB) to the unit.
5. Place the unit in RECORD mode, and adjust the REC LEVEL control (VR601, VR602) so that the V.T.V.M. reads 32.6 mV.
6. Set the Dolby N.R. switch (SW2-B) to the ON position and apply signals (1 kHz) to the unit. If the indication of the V.T.V.M. is 43 ~ 85 mV at that time, this means that the Dolby Noise Reduction is normal.

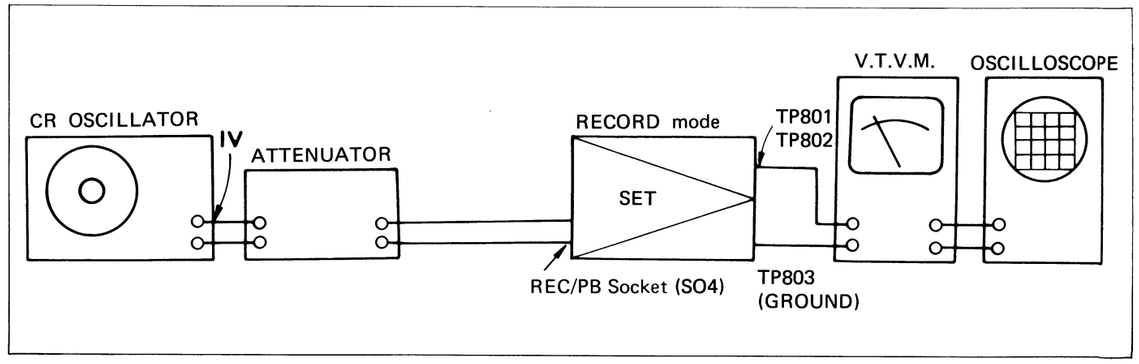


Figure 34

GENERAL ALIGNMENT INSTRUCTION

Alignment is an exacting procedure and should be undertaken only when necessary.
If alignment of AM and FM is required, either section may be done first.

Note : Use a non-metallic alignment tool.

REQUIRED EQUIPMENT:

1. Signal generator with a frequency range of 140 kHz to 18.5 MHz: AM
2. Signal generator with a frequency range of 87.4 MHz to 109 MHz: FM
3. Signal generator with a frequency output of 10.7 MHz ± 0.5 MHz: FM
4. Vacuum tube voltmeter (AC-VTVM)
5. Sweep signal generator with a sweep range of at least 500 kHz and center frequency of 10.7 MHz with at least a 10.7 MHz marker. (Ext. Marker may be used.)
6. Oscilloscope with a wide range amplifier of approximately 100 kHz.
7. Test loops, a coil of any size wire, one turn or more.
8. FM stereo signal generator.
9. Audio signal generator with a frequency of 20 Hz to 100 kHz.
10. Frequency counter.

The FM stereo section, however, should be done only if the FM monaural section is properly adjusted.

Notes: Allow the set at least five minutes to warm up before attempting alignment. During alignment keep the signal generator output at the lowest level that will maintain a usable output from the set, except for FM stereo signal generator. Take much care, lest the grounding of FM sweep signal generator input should make multipaths which made FM IF alignment incorrect. To avoid this the grounding lead may be connected through 0.01 – 0.04 MFD capacitor to the tuner chassis when sweep generator is connected to the tuner section.

Generator modulation (AM) 30%, 400Hz
Generator modulation (FM) 40kHz, 400Hz
Generator modulation . . . . . .CH.L. or CH.R.
(FM stereo) 40kHz, 1000Hz Mod.

THE INSTRUCTION OF FREQUENCY ADJUSTMENT

In order to comply with FTZ rule Nr. 358/1970, please fix the low end of dial frequency (87.5 MHz) and the high end of dial frequency (107.9 MHz) on FM band, by adjusting fL variable resistor (VR103) and fH variable resistor (VR104), respectively, as illustrated in Figure 22 (Page 11).

ALIGNMENT CHART

AM IF ALIGNMENT (Refer to Figures 22 and 35)

STEP	BAND	TEST STAGE	SIGNAL GENERATOR		DIAL POINTER SETTING	SCOPE CONNECTION	ADJUSTMENT	REMARKS
			CONNECTION	FREQUENCY				
1	MW	IF	Thru 0.01μF to IC103 (1 Pin) as small as possible	455kHz (Sweep)	High end of Dial	Oscilloscope connected to TP1 and ground.	Adjust T103 to obtain maximum response, at 455 kHz. Next, adjust T104 to obtain minimum response at 455kHz	Repeat 2 or 3 times.

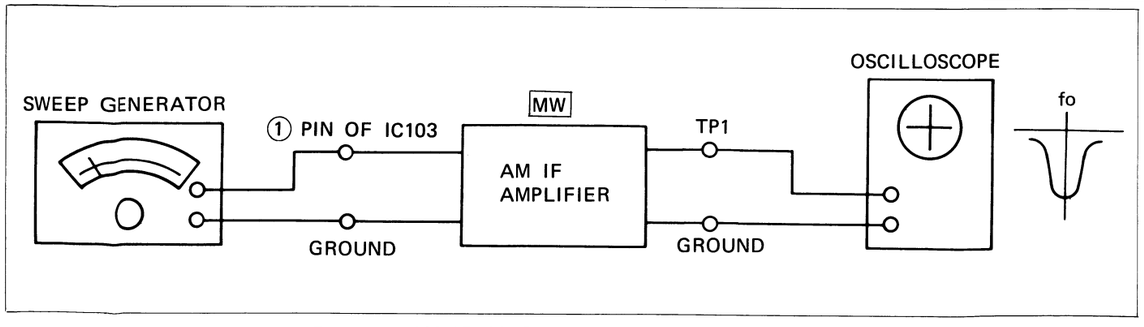


Figure 35 AM IF ALIGNMENT EQUIPMENT CONNECTIONS

AM RF ALIGNMENT (Refer to Figures 22 and 36)

STEP	BAND	TEST STAGE	SIGNAL GENERATOR		DIAL POINTER SETTING	METER CONNECTION	ADJUSTMENT	REMARKS
			CONNECTION	FREQUENCY				
1	LW	Band Coverage	Radiated Signal as small as possible	145kHz Modulated	Low end of Dial	VTVM connected to TP1 and ground	Oscillation coil L306	Adjust for maximum output Repeat 2 or 3 times.
2	LW		Radiated Signal as small as possible	385kHz Modulated	High end of Dial	Same as above	Oscillation Trimmer TC303B	Same as above
3	LW	Tracking	Radiated Signal as small as possible	170kHz Modulated	170kHz	Same as above	Antenna coil L109 (Bobbin of LW)	Same as above
4	LW		Radiated Signal as small as possible	340kHz Modulated	340kHz	Same as above	Antenna Trimmer TC306	Same as above
5	MW	Band Coverage	Radiated Signal as small as possible	515kHz Modulated	Low end of Dial	Same as above	Oscillation coil L305	Same as above
6	MW		Radiated Signal as small as possible	1650kHz Modulated	High end of Dial	Same as above	Oscillation Trimmer TC303A	Same as above
7	MW	Tracking	Radiated Signal as small as possible	600kHz Modulated	600kHz	Same as above	Antenna coil L109 (Bobbin of MW)	Same as above
8	MW		Radiated Signal as small as possible	1400kHz Modulated	1400kHz	Same as above	Antenna Trimmer TC305	Same as above
9	SW	Band Coverage	Through IEC dummy to AM EXT ANT. as small as possible	5.7MHz Modulated	Low end of Dial	Same as above	Oscillation coil L304	Same as above
10	SW		Same as above	18.3MHz Modulated	High end of Dial	Same as above	Oscillation Trimmer TC301	Same as above
11	SW	Tracking	Same as above	6.5MHz Modulated	6.5MHz	Same as above	Antenna coil L303	Same as above
12	SW		Same as above	16MHz Modulated	16MHz	Same as above	Antenna Trimmer TC302	Same as above

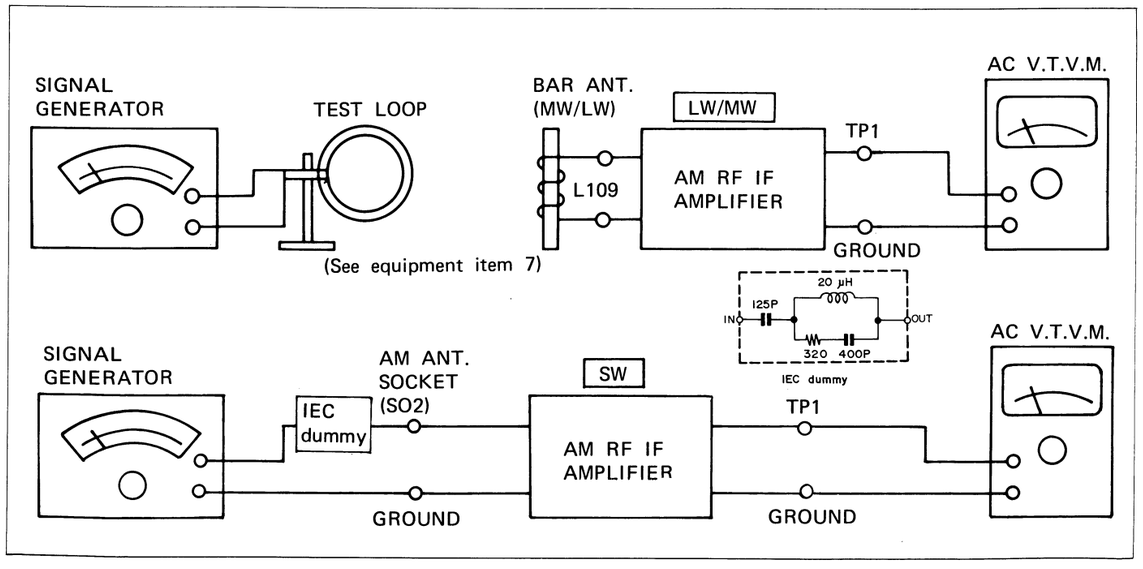
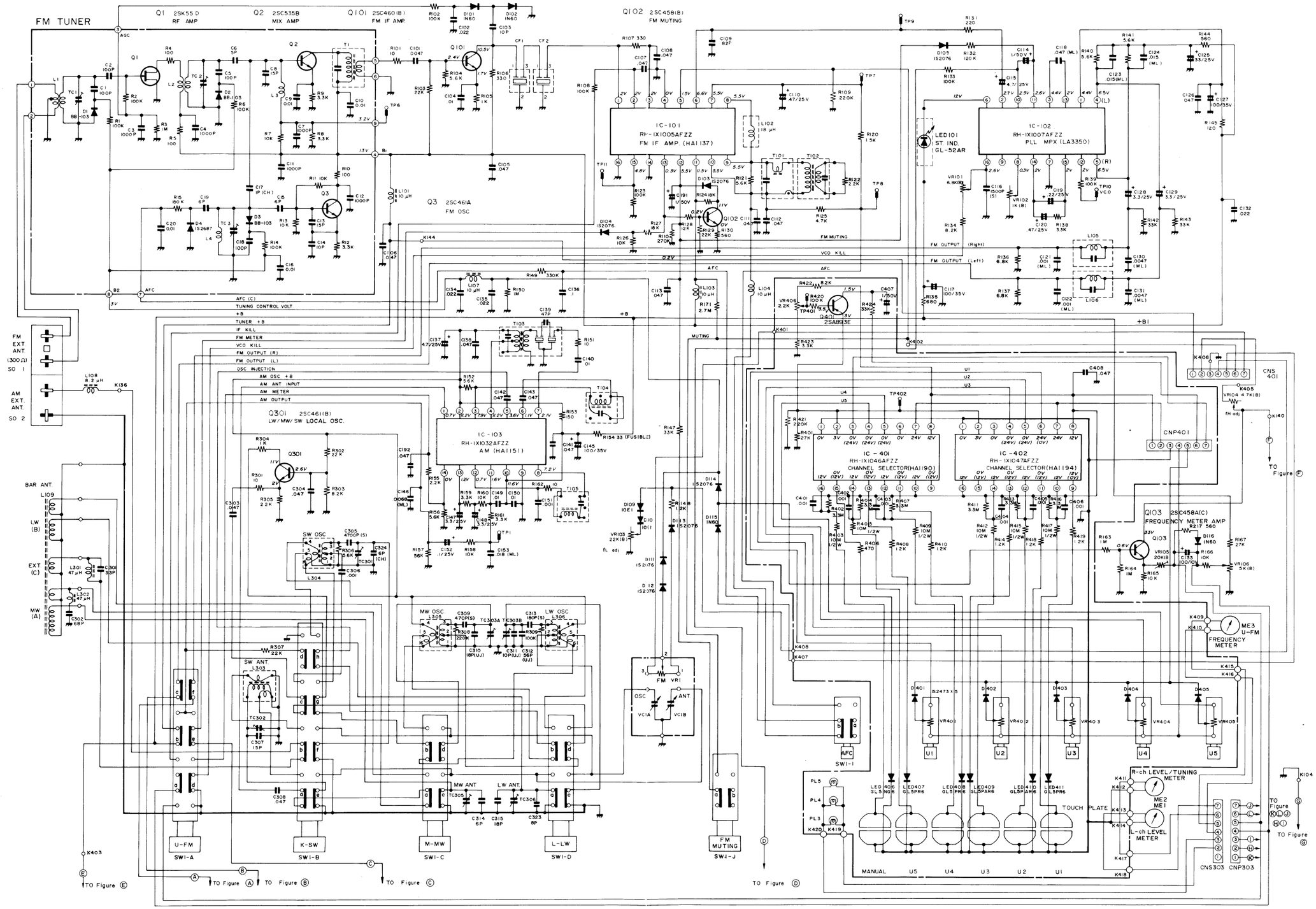


Figure 36 AM RF ALIGNMENT EQUIPMENT CONNECTIONS

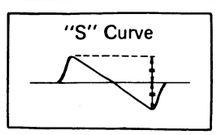


(Specifications or wiring diagrams of this model are subject to change for the improvement without prior notice.)

Figure 41 SCHEMATIC DIAGRAM (TUNER SECTION)

FM IF ALIGNMENT (Refer to Figures 22 and 37) AFC/MUTING switch (SW1–I, J) : OFF

STEP	BAND	TEST STAGE	SIGNAL GENERATOR		DIAL POINTER SETTING	METER SCOPE CONNECTION	ADJUSTMENT	REMARKS
			CONNECTION	FREQUENCY				
1	FM	IF (See NOTE A)	Through 1.5pF to TP6 and ground.	10.7MHz ±500kHz as small as possible	High end of Dial	Oscilloscope connected to test point TP11 and TP2 (ground).	T1	Adjust "IF" curve at maximum as shown in the figure 37.
2	FM		Same as above	No signal	Same as above	V.T.V.M. connected to test point TP7 (+) and TP8 (–)	T101	Adjust the 0V to lead of V.T.V.M
3	FM		Same as above	Same as step 1	Same as above	Oscilloscope connected to test point TP9	T102	Adjust for best "S" curve



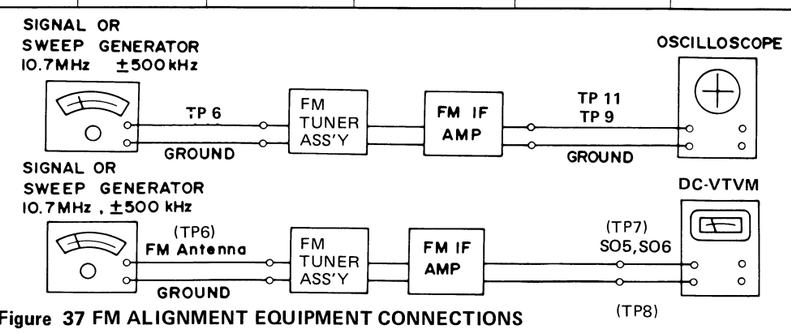


Figure 37 FM ALIGNMENT EQUIPMENT CONNECTIONS

FM RF ALIGNMENT (Refer to Figures 22 and 37) AFC/MUTING switch (SW1–I, J) : OFF, Touch key : MANUAL

STEP	BAND	TEST STAGE	SIGNAL GENERATOR		DIAL POINTER SETTING	METER CONNECTION	ADJUSTMENT	REMARKS
			CONNECTION	FREQUENCY				
1	FM	Band coverage	FM Antenna	87 MHz as small as possible (Modulated)	Low end of Dial	DC-V.T.V.M. connected to 8 pin of FM FRONT END	VR103	Adjust the 2.87V to 8 pin of FM Tuner Front end.
2			Same as above	109 MHz as small as possible (Modulated)	High end of Dial	Same as above	VR104	Adjust the 24.24V to 8 pin of FM Tuner Front end. Repeat steps 1 and 2 until no further improvement can be made
* 3			Same as above	87 MHz as small as possible (Modulated)	Low end of Dial	V.T.V.M. Connection to SO5 or SO6	Oscillation coil L4	Adjust for maximum output
* 4			Same as above	109MHz as small as possible (Modulated)	High end of Dial	Same as above	Oscillation trimmer TC3	Same as above. Repeat steps 3 and 4 until no further improvement can be made
* 5	FM	Tracking	Same as above	90MHz as small as possible (Modulated)	90MHz	Same as above	Antenna coil L1 and RF coil L2	Adjust for maximum output
* 6			Same as above	106MHz as small as possible (Modulated)	106MHz	Same as above	Antenna trimmer TC1 and RF trimmer TC2	Same as above 5~6 Repeat 2 or 3 Times

(*) As for FM high-frequency range (front-end section), since it has been already adjusted, do not rotate the coils and trimmers unless the adjustment becomes necessary — readjust the FM-high frequency only when it suffers a considerable disalignment.

FM MPX ALIGNMENT (Refer to Figures 22 and 38)

STEP	BAND	TEST STAGE	STEREO SIGNAL GENERATOR		TUNING FREQUENCY	METER CONNTECTION	ADJUSTMENT	REMARKS
			CONNECTION	MOD. FREQUENCY				
1	FM	V.C.O.	FM-ANT. Terminal	98MHz Modulated	98MHz	V.T.V.M. connected to TP10 and TP2 (ground)	VR101	Adjust for 19 ± 0.1kHz
2	FM	STEREO SEPARATION	FM-ANT. Terminal	98MHz stereo Mod. (1000Hz) L-ch only	98MHz	V.T.V.M. connected to L-ch SP. socket (SO5)	Volume control (VR604-A, B)	Adjust the V.T.V.M. reads 1.4 V (0 dB)
3			Same as above	Same as above	Same as above	V.T.V.M. connected to R-ch SP. socket (SO6)	VR102	Adjust for minimum output

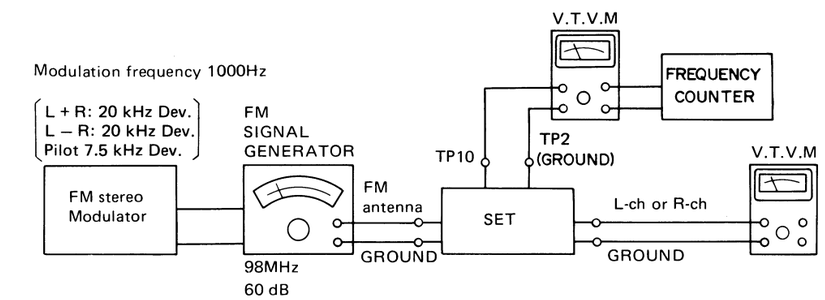


Figure 38 FM STEREO ALIGNMENT EQUIPMENT CONNECTIONS

FM PRESET METER ADJUSTMENT

(Refer to Figures 22 and 39)

1. Set the function switch (SW1) to "U-FM" position.
2. Connect the FM signal generator to the FM antenna terminal of the set. (The FM signal generator is kept to "92 MHz".)
3. Rotate the U1 preset knob of the set to tune in 92 MHz signal.
4. Adjust the semi-variable resistor VR106 so that the FM preset meter ME3 will indicate "92 MHz".
5. Have the FM signal generator produce 104 MHz signal.
6. Rotate the U2 preset knob of the set to tune in 104 MHz signal.
7. Adjust the semi-variable resistor VR105 so that the FM preset meter ME3 will indicate "104 MHz".
8. Repeat two or three times the procedures 2 to 7 stated above.

NOTE A

Five kings of ceramic filter (CF1, CF2) are available for this set. The difference of central frequency from each other can be known by the color indication. The table below shows such a difference of IF and S curve, depending upon the color indications of the ceramic filter (CF1, CF2).

Central Frequency	D	Black	10.64MHz ± 30kHz
	B	Blue	10.67MHz ± 30kHz
	A	Red	10.70MHz ± 30kHz
	C	Orange	10.73MHz ± 30kHz
	E	White	10.76MHz ± 30kHz

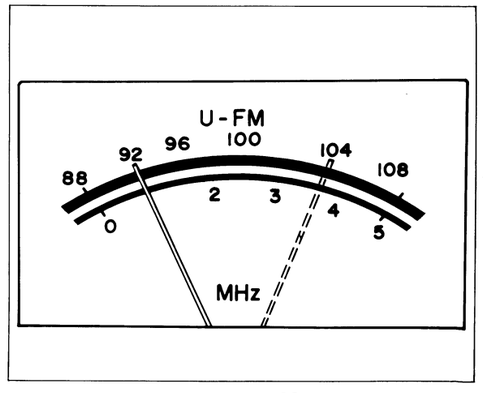


Figure 39

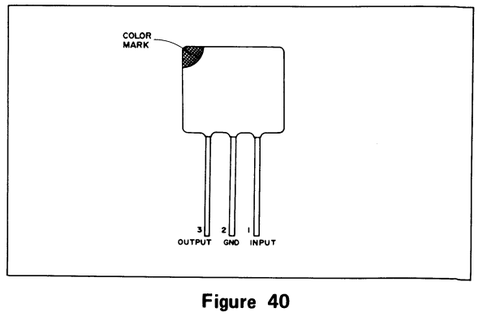


Figure 40

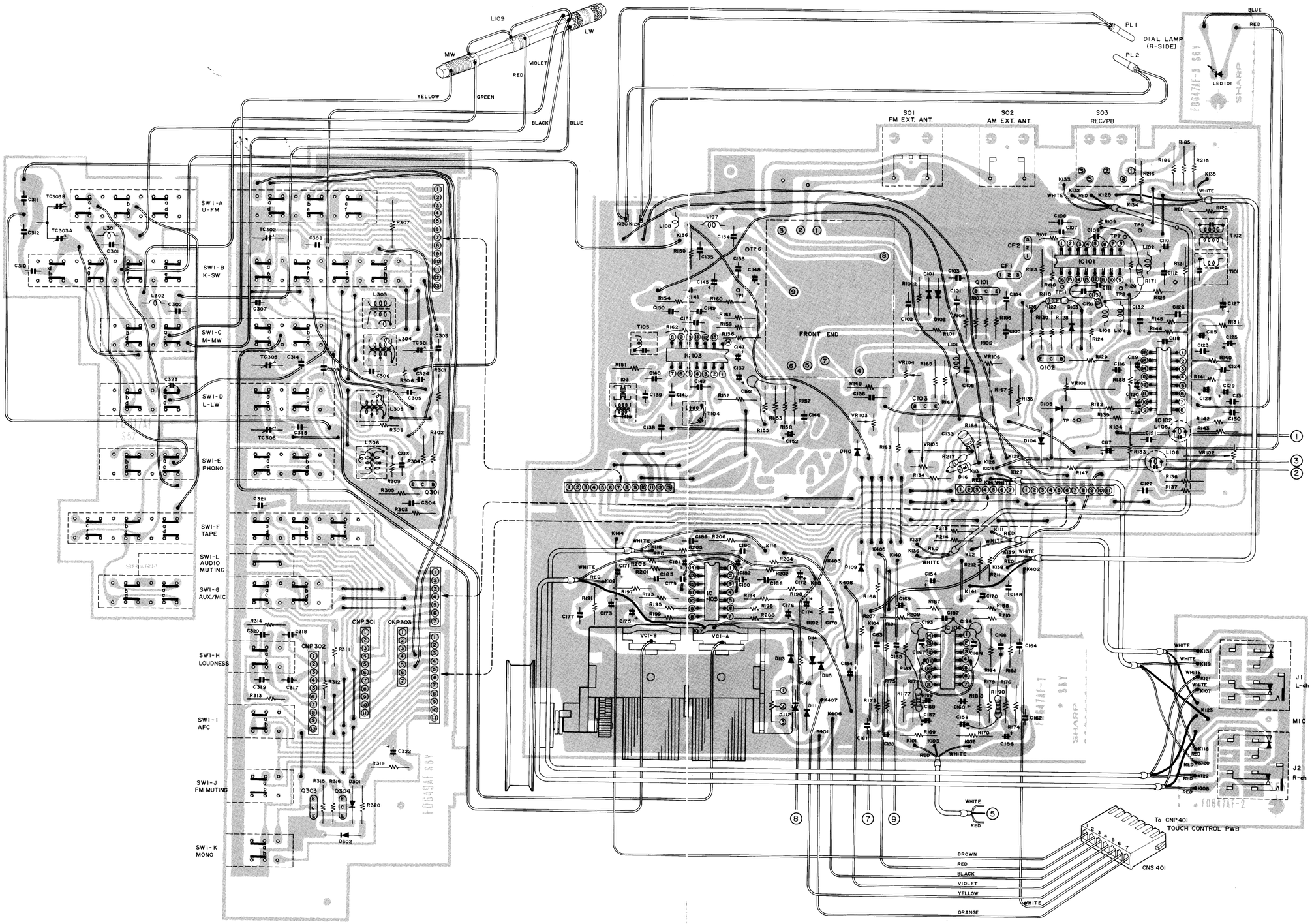


Figure 44 WIRING SIDE OF TUNER/SWITCH P.W.B.

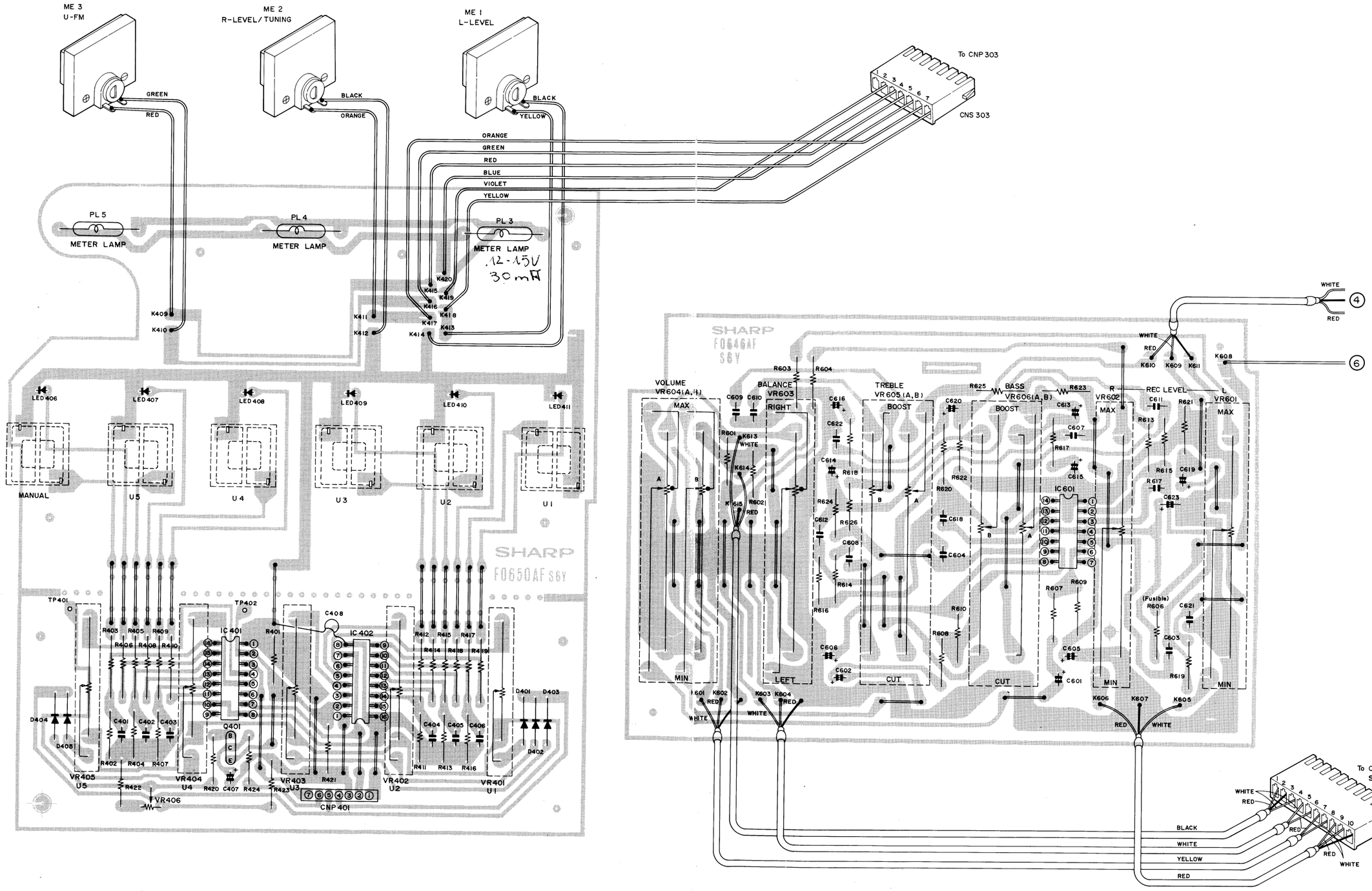
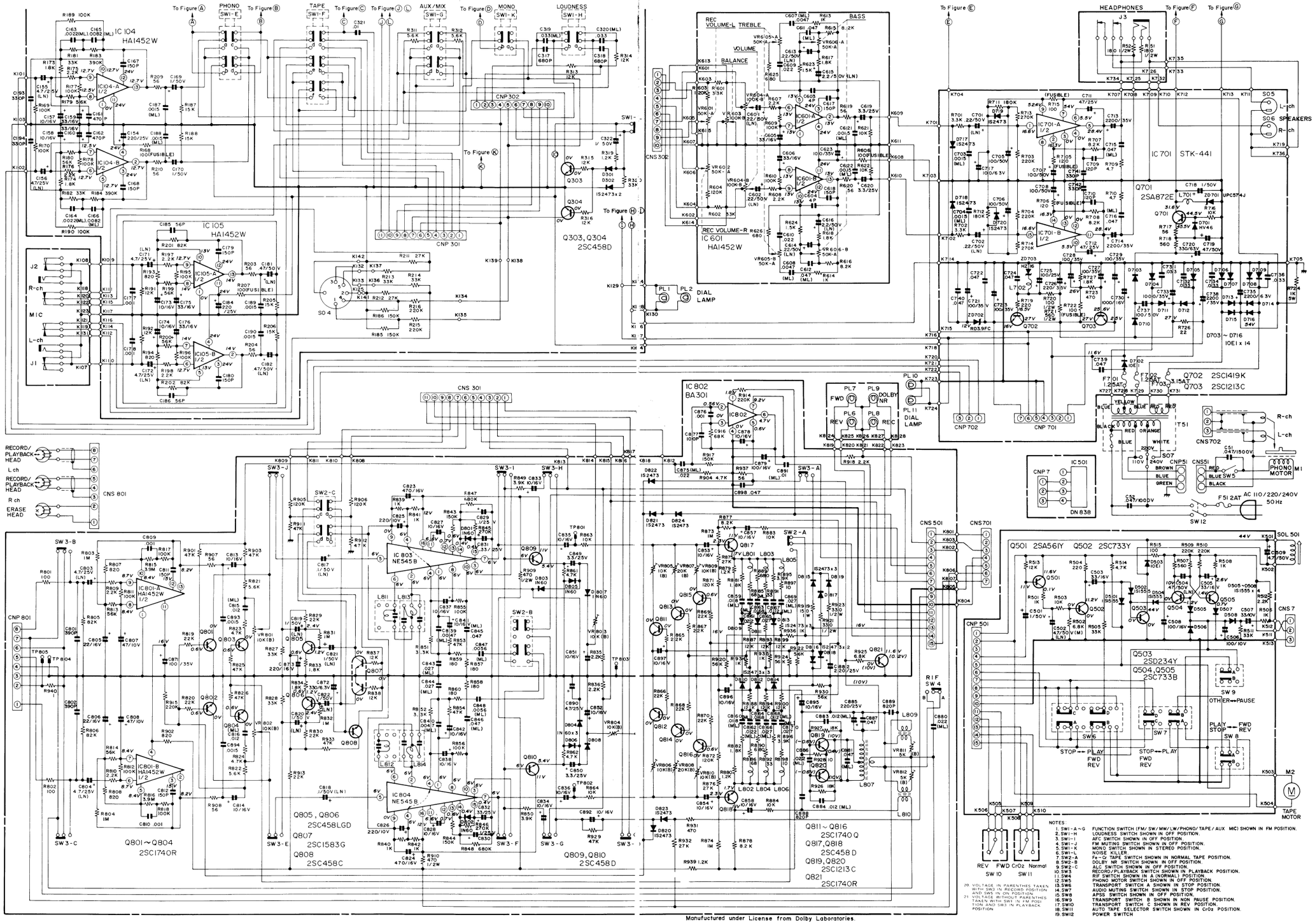


Figure 45 WIRING SIDE OF TONE/TOUCH CONTROL P.W.B.



NOTES:

1. SW1-A~G FUNCTION SWITCH (FM/SW/MW/LW/PHONO/TAPE/AUX MIC) SHOWN IN FM POSITION.
2. SW1-H LOUDNESS SWITCH SHOWN IN OFF POSITION.
3. SW1-I AFC SWITCH SHOWN IN OFF POSITION.
4. SW1-J FM MUTING SWITCH SHOWN IN OFF POSITION.
5. SW1-K MONO SWITCH SHOWN IN STEREO POSITION.
6. SW1-L NOISE KILLER.
7. SW2-A Fe-Cr TAPE SWITCH SHOWN IN NORMAL TAPE POSITION.
8. SW2-B DOLBY NR SWITCH SHOWN IN OFF POSITION.
9. SW2-C ALC SWITCH SHOWN IN OFF POSITION.
10. SW3 RECORD/PLAYBACK SWITCH SHOWN IN PLAYBACK POSITION.
11. SW4 RIF SWITCH SHOWN IN A (NORMAL) POSITION.
12. SW5 PHONO MOTOR SWITCH SHOWN IN OFF POSITION.
13. SW6 TRANSPORT SWITCH A SHOWN IN STOP POSITION.
14. SW7 AUDIO MUTING SWITCH SHOWN IN STOP POSITION.
15. SW8 APSS SWITCH SHOWN IN OFF POSITION.
16. SW9 TRANSPORT SWITCH B SHOWN IN NON PAUSE POSITION.
17. SW10 TRANSPORT SWITCH C SHOWN IN REV POSITION.
18. SW11 AUTO TAPE SELECTOR SWITCH SHOWN IN CrO2 POSITION.
19. SW12 POWER SWITCH

20. VOLTAGE IN PARENTHES TAKEN WITH SW3 IN RECORD POSITION AND SW5 IN ON POSITION.
21. VOLTAGE WITHOUT PARENTHES TAKEN WITH SW1 IN FM POSITION AND SW3 IN PLAYBACK POSITION.

(Specifications or wiring diagrams of this model are subject to change for the improvement without prior notice.)

Figure 42 SCHEMATIC DIAGRAM (AUDIO SECTION)

	PART NO.	BUSHING	CONNECTION Ⓐ	CONNECTION Ⓑ
VDE	QACCV0001AGZZ	LBSHC0004AGZZ	BLUE	BLACK
SEMKO	QACCN0001AGZZ			
SEV	QACCS9001SE00	LBSHC0053AFZZ	BLACK	BLACK
A-CLUB	QACCZ0002TA0F		BROWN	BROWN
—	QACCZ0002AG08		GRAY	GRAY

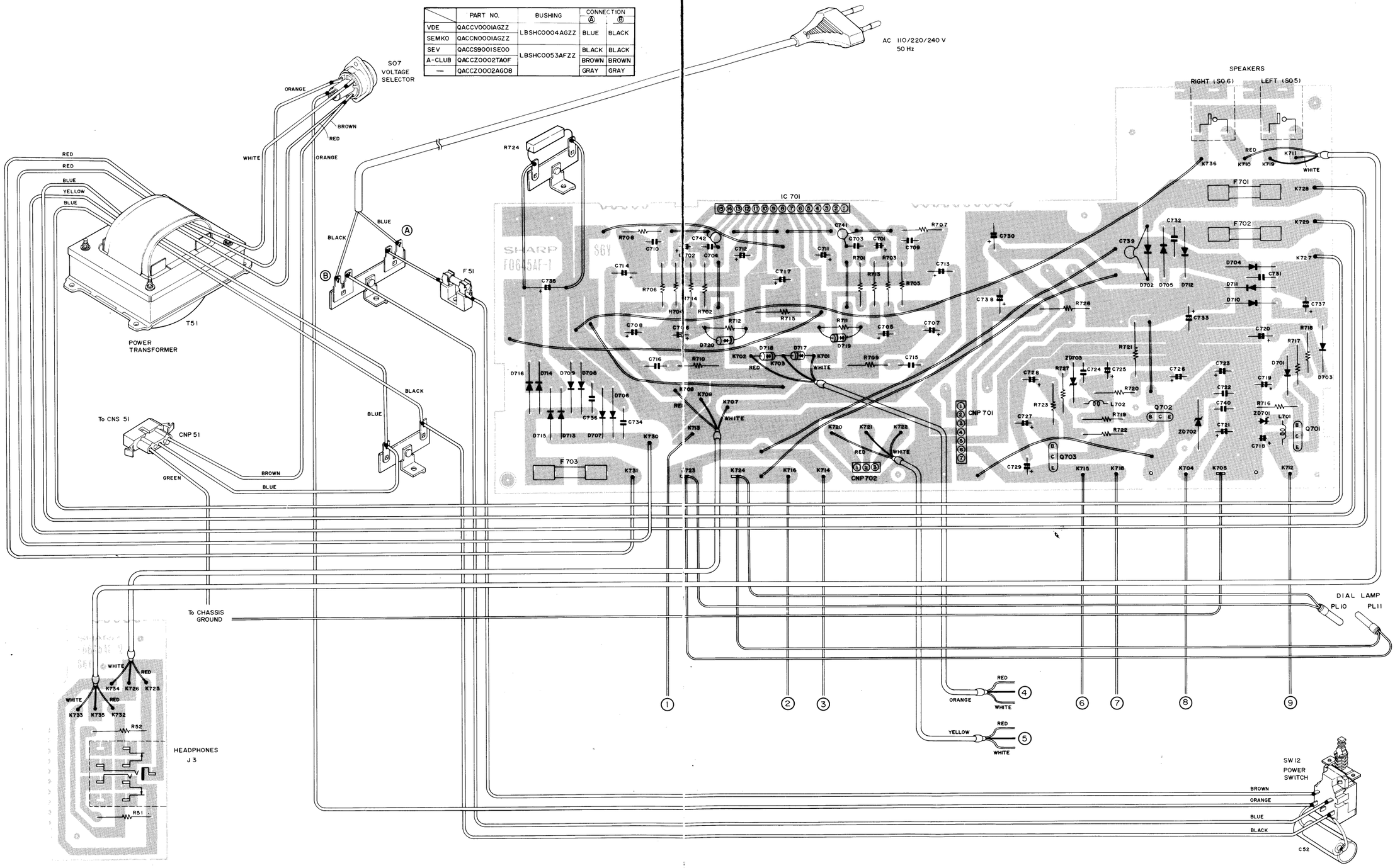


Figure 43 WIRING SIDE OF POWER P.W.B.

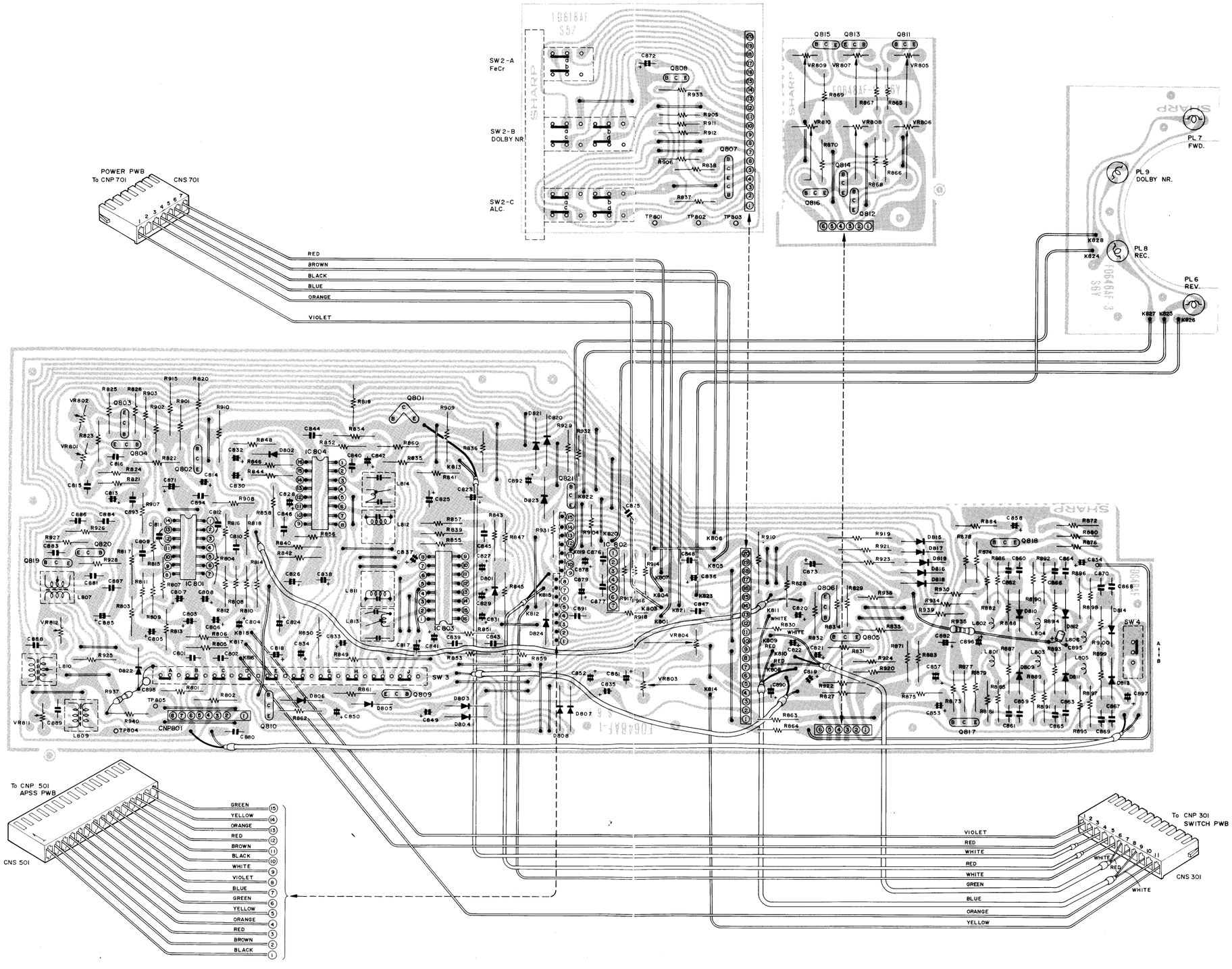


Figure 46 WIRING SIDE OF TAPE DECK P.W.B.

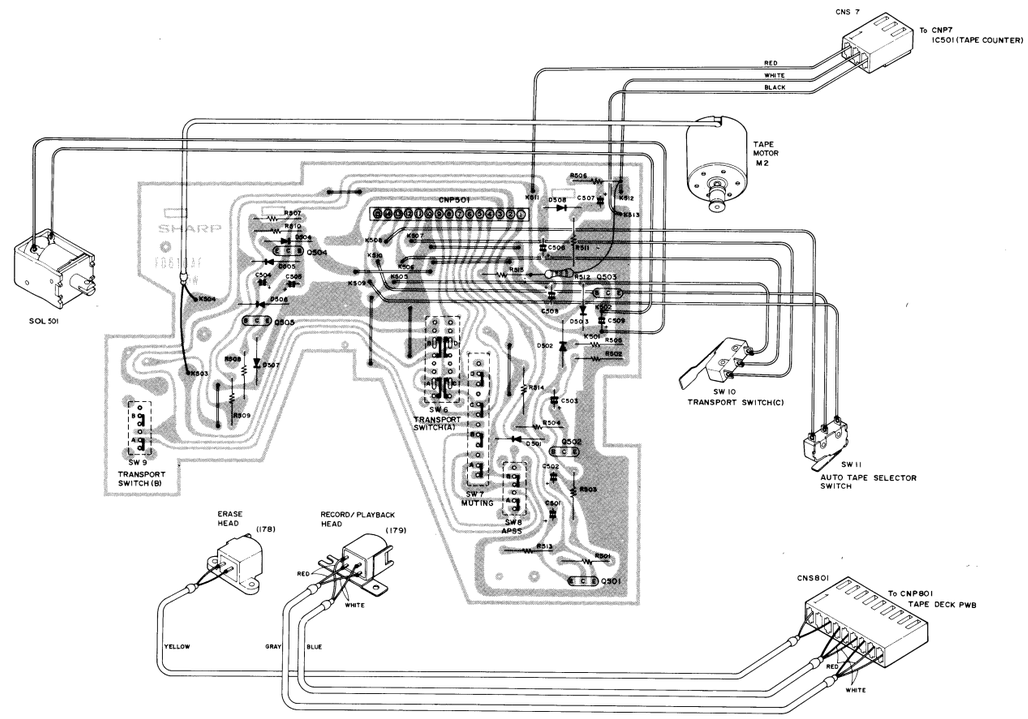


Figure 47 WIRING SIDE OF APSS P.W.B.

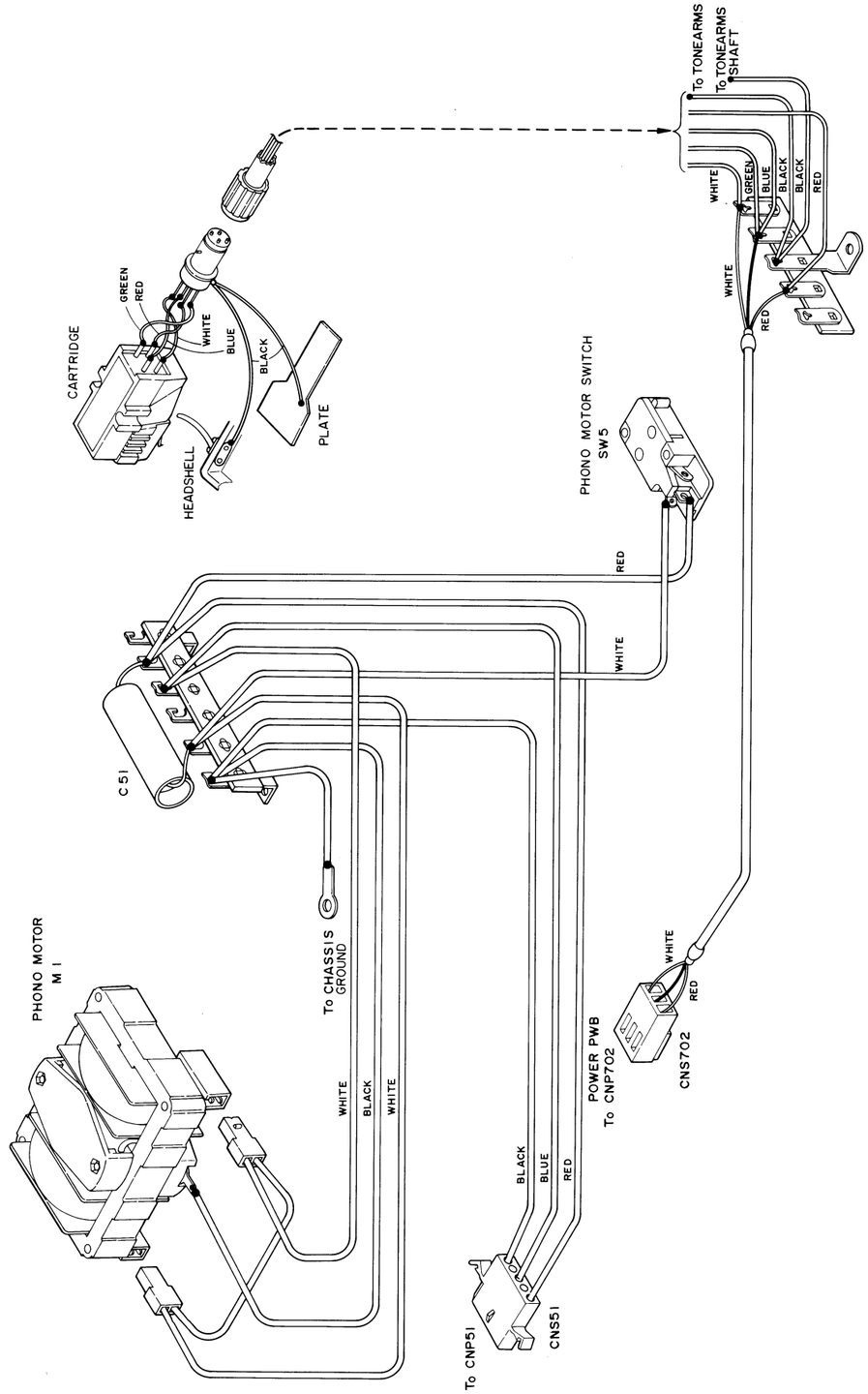
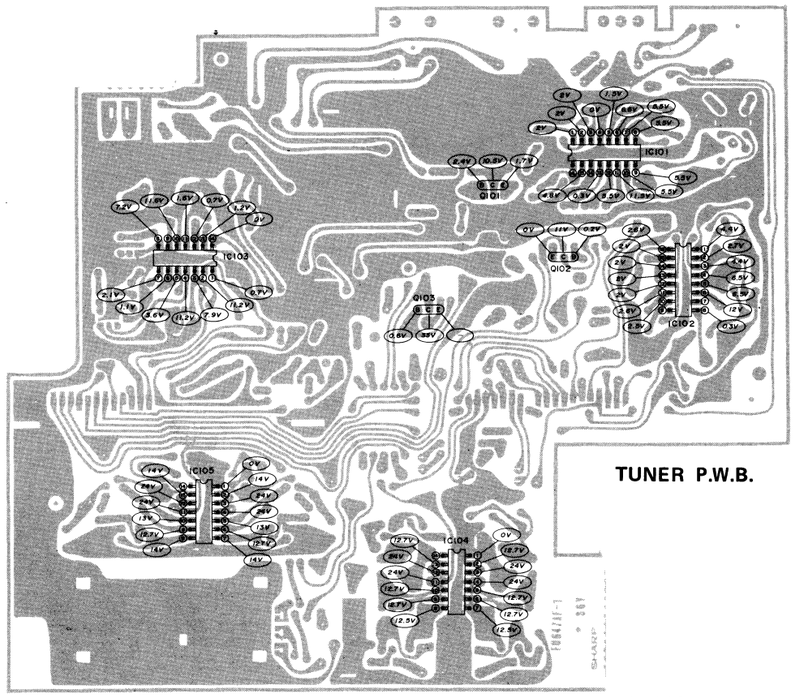
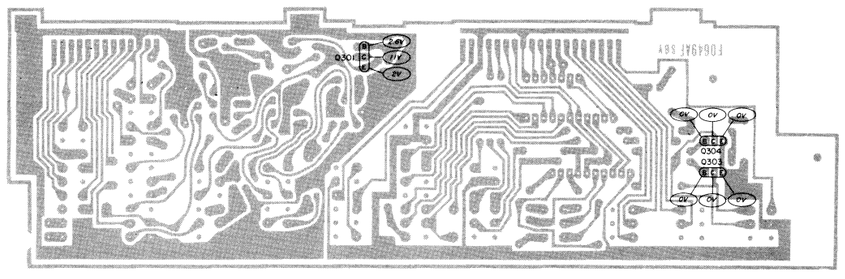


Figure 48 WIRING CONNECTION OF RECORD PLAYER

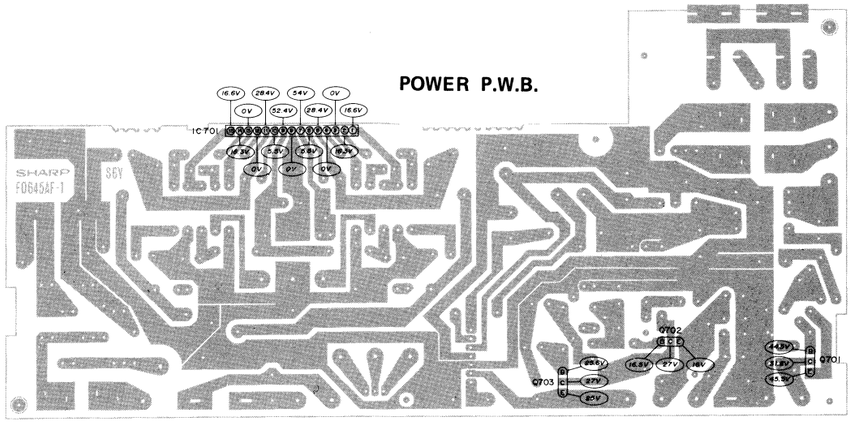
TUNER P.W.B.



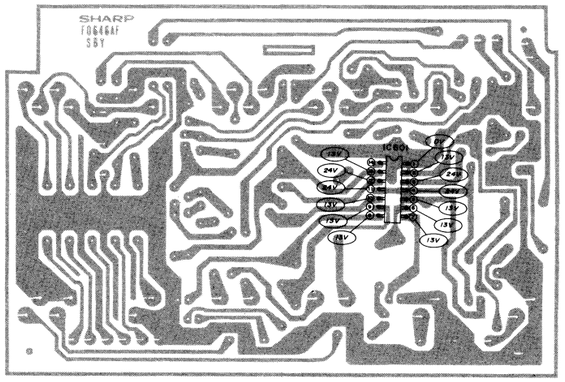
SWITCH P.W.B.



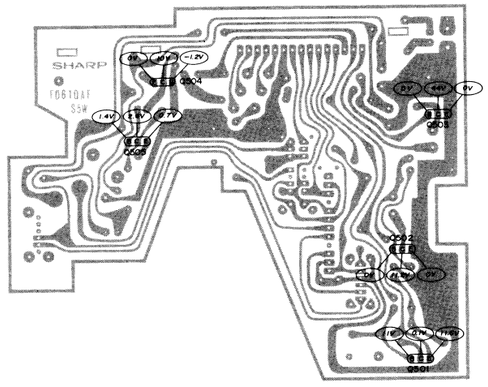
POWER P.W.B.



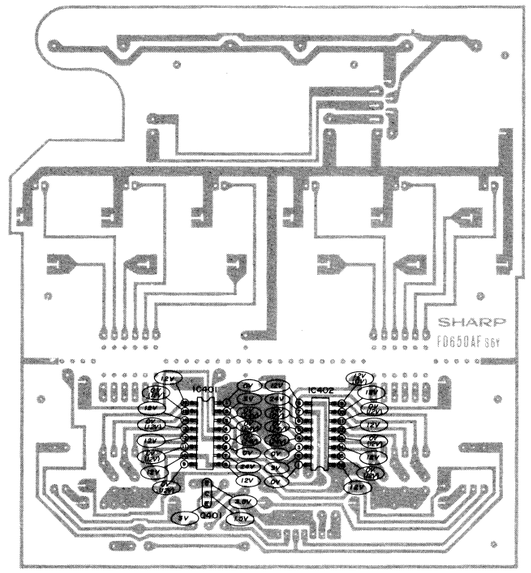
TONE P.W.B.

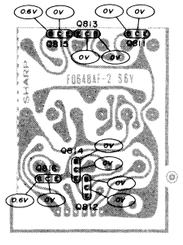


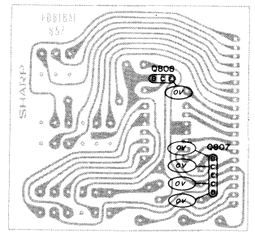
APSS P.W.B.



TOUCH CONTROL P.W.B.







TAPE DECK P.W.B.

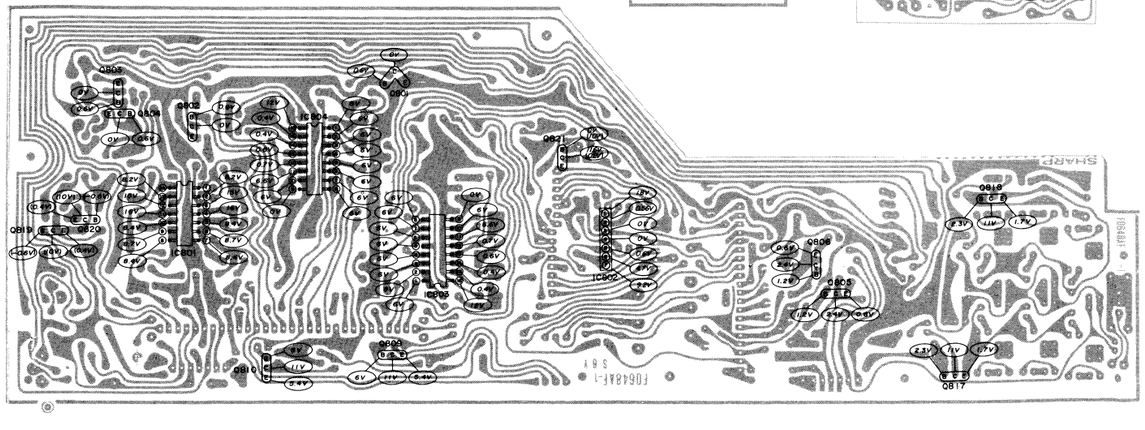


Figure 49 VOLTAGE GUIDE OF P.W.B.

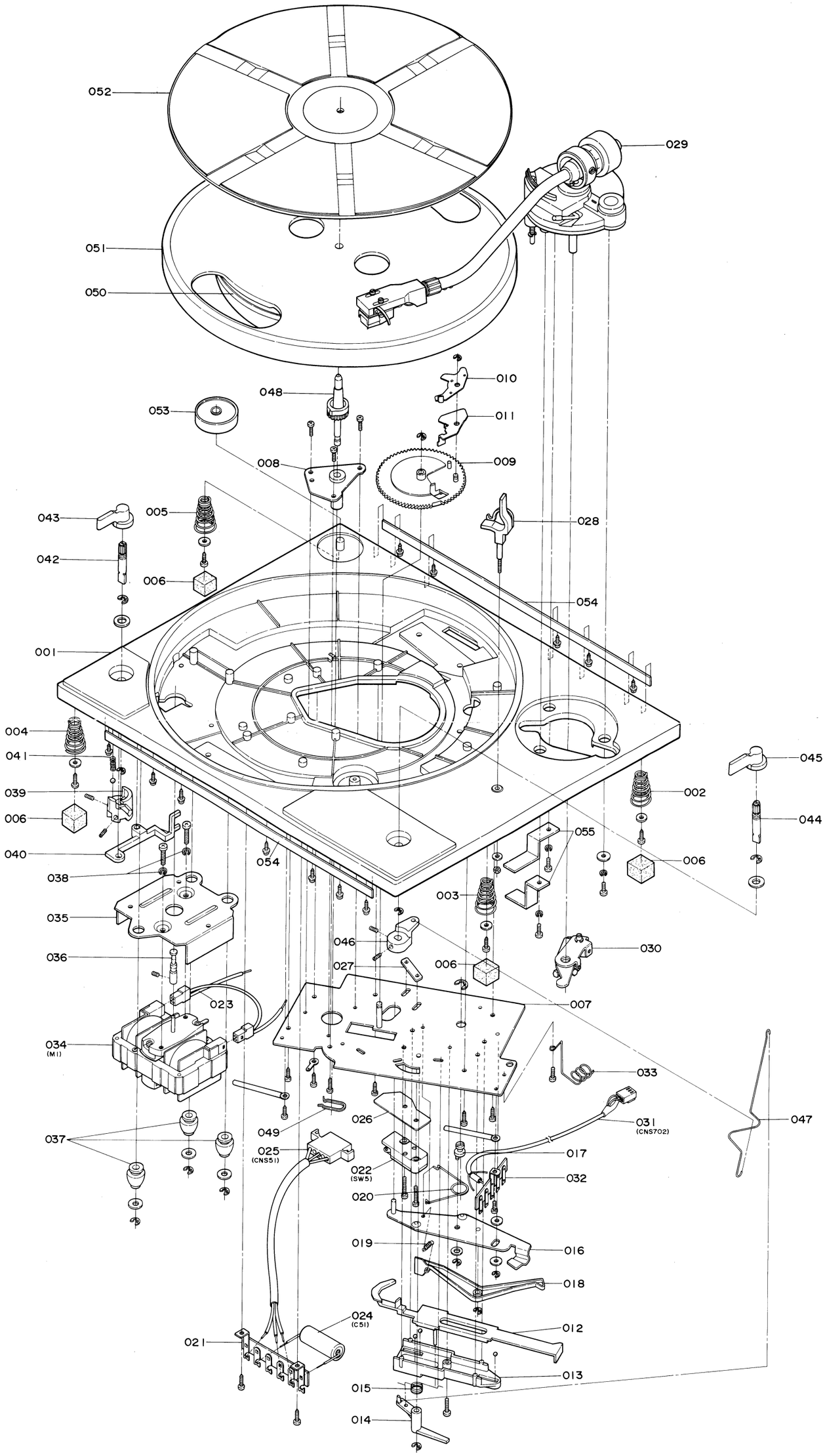


Figure 50 RECORD PLAYER EXPLODED VIEW

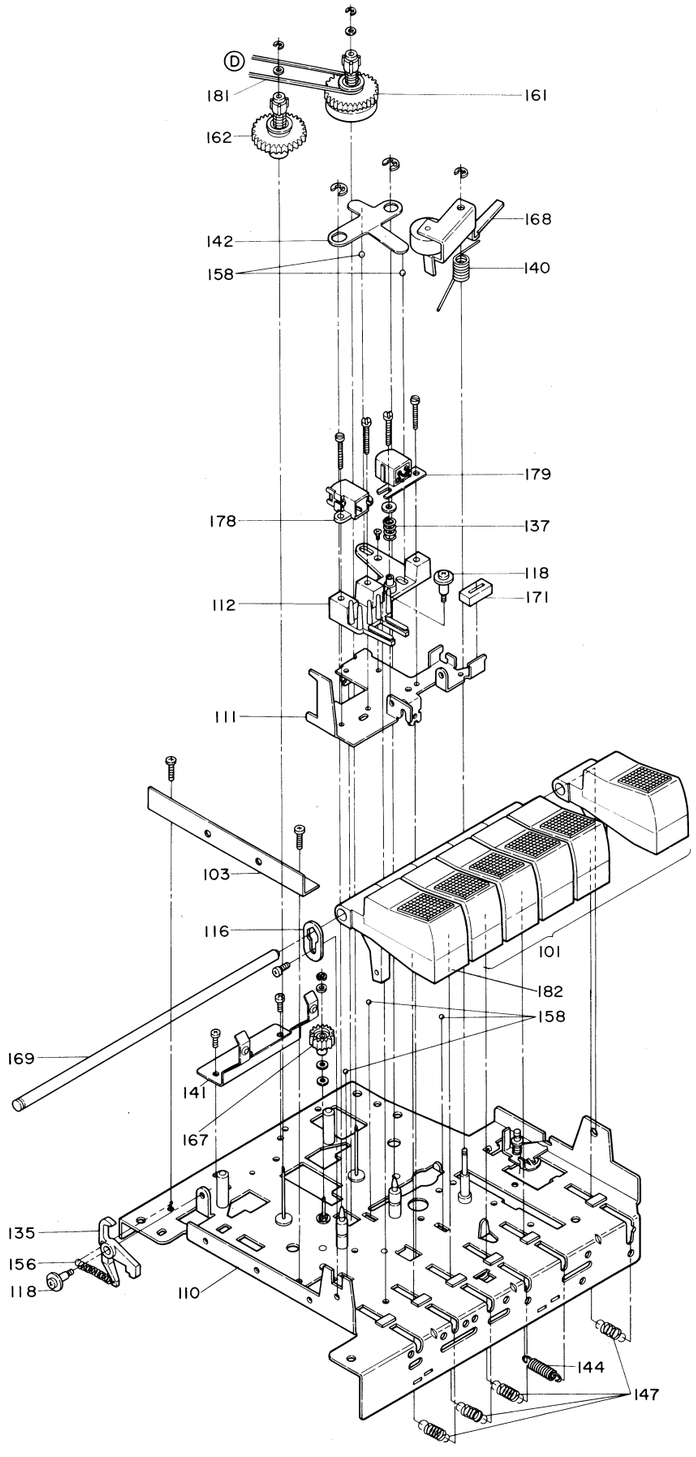


Figure 51 TAPE DECK EXPLODED TOP VIEW

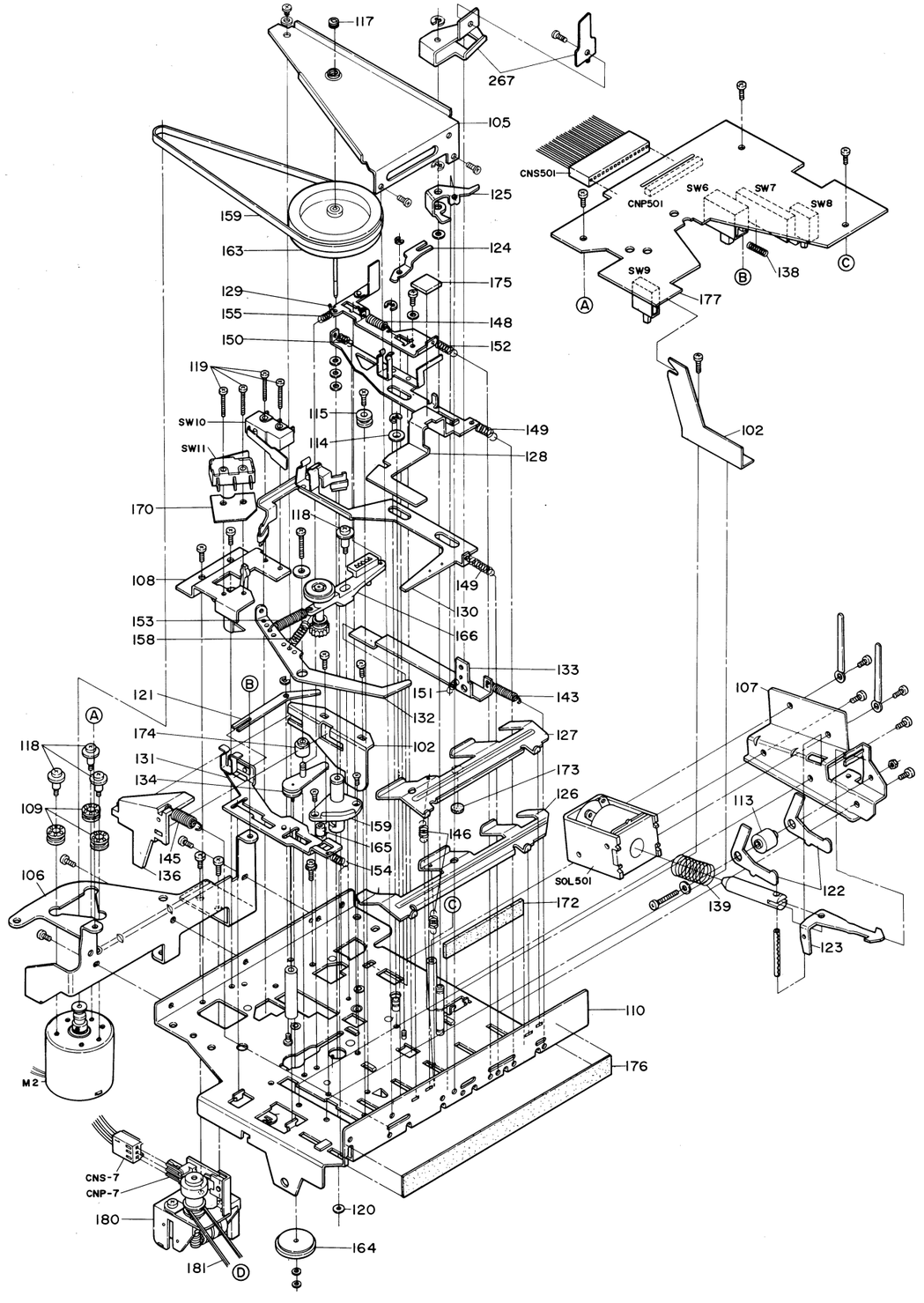
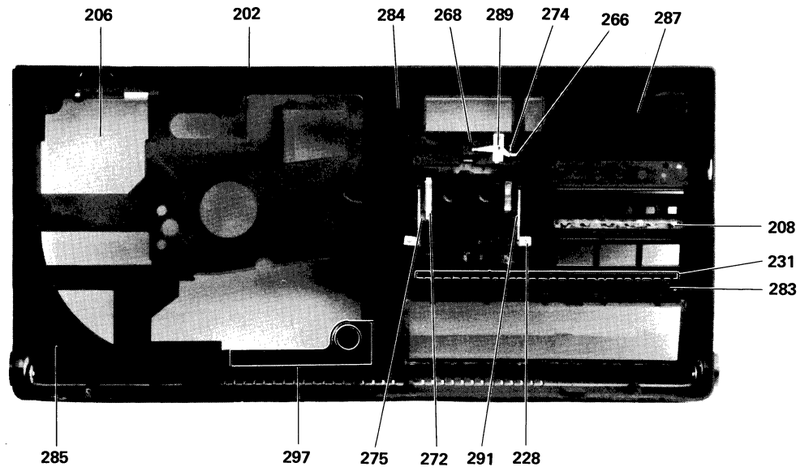
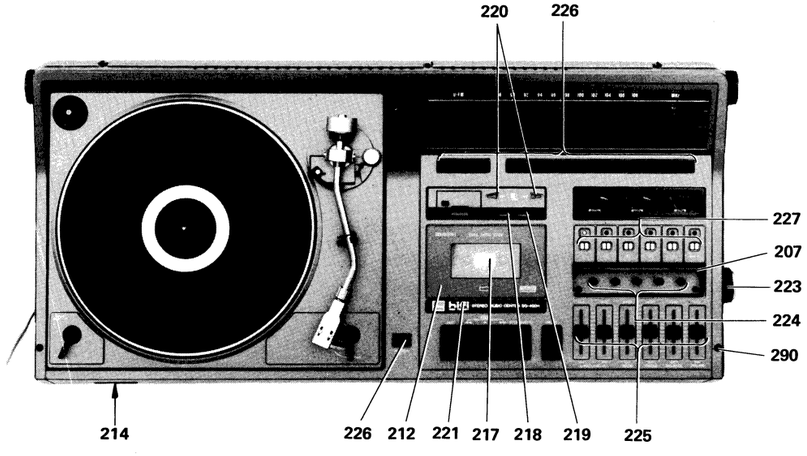
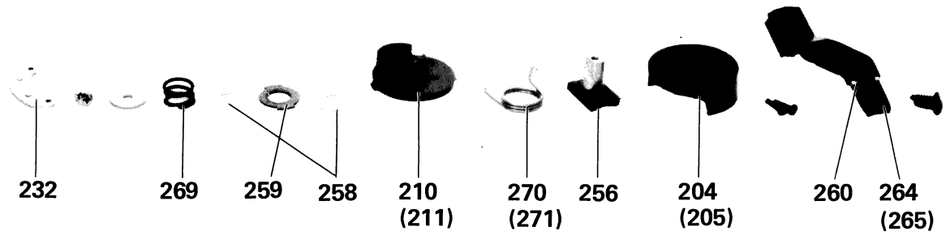


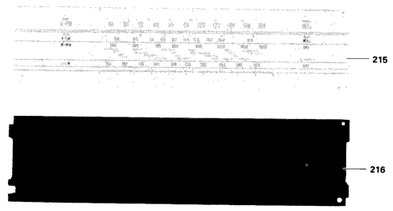
Figure 52 TAPE DECK EXPLODED BOTTOM VIEW

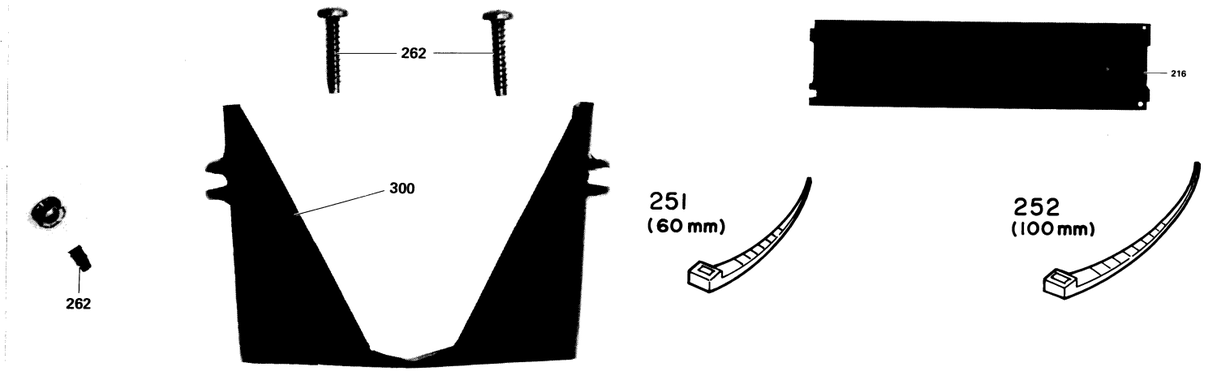






( ): Left side





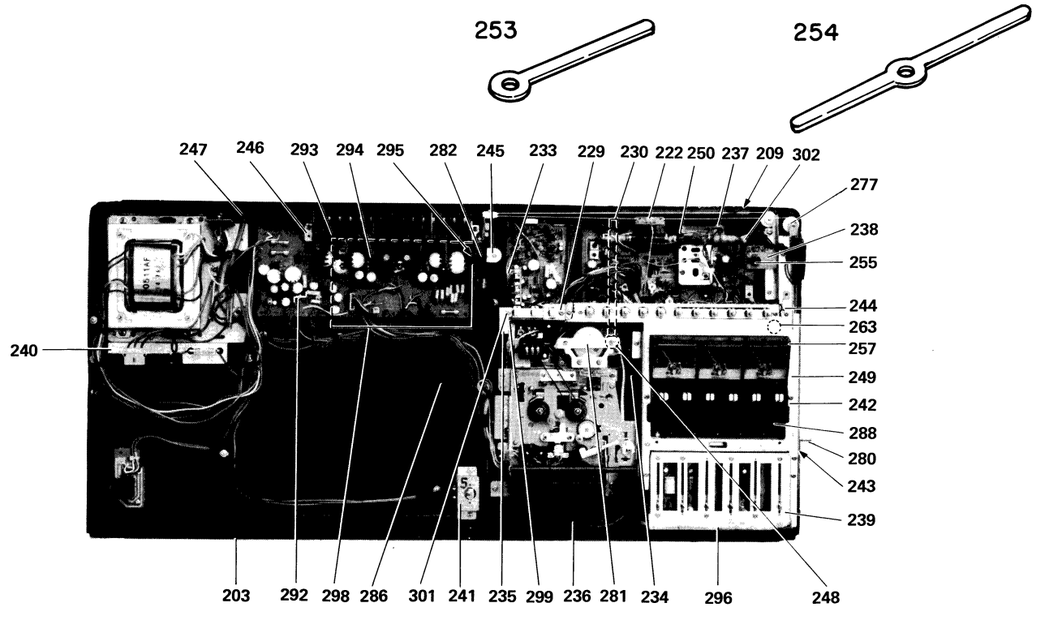


Figure 53 MISCELLANEOUS PARTS GUIDE

REPLACEMENT PARTS LIST

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following informations.

1. MODEL NUMBER 2. REF. NO.
3. PART NO. 4. DESCRIPTION

REF. NO.	PART NO.	DESCRIPTION	CODE
		IC (Integrated Circuit)	
IC101	RH-IX1005AFZZ	FM IF Amp. and Detector (Quadrature) (HA1137)	AT
IC102	RH-IX1007AFZZ	PLL MPX. Demodulator (LA3350)	AQ
IC103	RH-IX1032AFZZ	AM CONV./IF/DET. (HA1151)	AK
IC104 (A, B)	RH-IX0427AGZZ	Phono Equalizer Amp. (HA1452W)	AP
IC105 (A, B)	RH-IX0427AGZZ	Mic. Pre Amp. (HA1452W)	AP
IC401	RH-IX1046AFZZ	Channel Selector (HA1190)	AS
IC402	RH-IX1047AFZZ	Channel Selector (HA1194)	AS
IC501	RH-IX1075AFZZ	Full Auto Stop Senser (DN838)	AL
IC601 (A, B)	RH-IX0427AGZZ	Tone Control Amp. (HA1452W)	AP
IC701 (A, B)	VHISTK-441X-1	Power Amp.(STK441-105)	BR
IC801 (A, B)	RH-IX0427AGZZ	Playback Equalizer Amp. (HA1452W)	AP
IC802	RH-IX0416AGZZ	APSS Limiting Amp. (BA301)	AH
IC803, IC804	RH-IX0431AGZZ	Dolby NR Processor (NE545B)	AY
		TRANSISTORS	
Q101	VS2SC460-B/-1	FM IF Amp. (2SC460Ⓑ)	AC
Q102	VS2SC458-B/-1	FM Muting (2SC458Ⓑ)	AC
Q103	VS2SC458AC/-1	U-FM Meter Amp. (2SC458Ⓐⓒ)	AC
Q301	VS2SC461-B/-1	AM Local Oscillator (2SC461Ⓑ)	AC
Q303, Q304	VS2SC458-D/-1	Audio Muting (2SC458Ⓓ)	AC
Q401	VS2SA893-E/-1	FM Muting for Channel Select (2SA893Ⓔ)	AD
Q501	VS2SA561-Y/-1	Switching (2SA561Ⓨ)	AD
Q502	VS2SC733-Y/-1	Level Comparator (2SC733Ⓨ)	AD
Q503	VS2SD234-Y/-3	Solenoid Switching (2SD234Ⓨ)	AG
Q504, Q505	VS2SC733-B/-1	Multivibrator for Auto Stop (2SC733Ⓑ)	AD
Q701	VS2SA872-E/-1	Voltage Regulator (2SA872Ⓔ)	AE
Q702	VS2SC1419-K1F	Voltage Regulator (2SC1419Ⓚ)	AG
Q703	VS2SC1213-C-3	Ripple Filter (2SC1213Ⓒ)	
Q801, Q802	VS2SC1740R/-1	APSS Muting (2SC1740Ⓡ)	AC
Q803, Q804	VS2SC1740R/-1	Switching, Playback Equalizer (2SC1740Ⓡ)	AC
Q805, Q806	VS2SC458LGD-1	Record Pre-Amp. (2SC458ⓁⒼⒹ)	AD
Q807	VS2SC1583G-1F	ALC (2SC1583Ⓖ)	AF
Q808	VS2SC458-C/-1	ALC Amp. (2SC458Ⓒ)	AC
Q809, Q810	VS2SC458-D/-1	Meter Drive Amp. (2SC458Ⓓ)	AC
Q811, Q812, Q813, Q814, Q815, Q816	VS2SC1740Q/-1	Switching, Record Equalizer (2SC1740Ⓠ)	AC
Q817, Q818	VS2SC458-D/-1	Record Equalizer Amp. (2SC458Ⓓ)	AC
Q819, Q820	VS2SC1213-C-3	Bias Oscillator (2SC1213Ⓒ) Matched Pair	
Q821	VS2SC1740R/-1	Switching Record Indicator (2SC1740Ⓡ)	AC
		LED (Light Emitting Diode)	
LED101	VHPGL-52AR/1F	FM Select Indicator (GL52AR)	AD
LED406	VHPGL5NG6//-1	Channel Selector Indicator MANUAL (GL5NG6)	AG
LED407	VHPGL5PR6//-1	Channel Select Indicator U1 (GL5PR6)	AH
LED408	VHPGL5PR6//-1	Channel Select Indicator U2 (GL5PR6)	AH
LED409	VHPGL5PR6//-1	Channel Select Indicator U3 (GL5PR6)	AH
LED410	VHPGL5PR6//-1	Channel Select Indicator U4 (GL5PR6)	AH
LED411	VHPGL5PR6//-1	Channel Select Indicator U5 (GL5PR6)	AH
		DIODES	
D101, D102	VHD1N60////-1	FM AGC (1N60)	AB
D103	VHD1S2076//-1	FM Muting (1S2076)	AB
D104	VHD1S2076//-1	Level Shift FM Meter (1S2076)	AB
D105	VHD1S2076//-1	Protector, Reverse Current (1S2076)	AB
D109, D110	VHD10E1////-1	Temperature Regulator (10E1)	AC
D111, D112, D113, D114	VHD1S2076//-1	Temperature Regulator (1S2076)	AB
D115	VHD1N60////-1	Temperature Regulator (1N60)	AB
D116	VHD1N60////-1	U-FM Meter Drive (1N60)	AB

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
D301, D302	VHD1S2473//-1	Level Shift for Audio Muting (1S2473)	AB
D401, D402, D403, D404, D405	VHD1S2473//-1	Protector, Reverse Current (1S2473)	AB
D501	VHD1S1555V/1G	Protector, Reverse Current for APSS Muting (1S1555)	AC
D502	VHD1S1555V/1G	Protector, Reverse Current for APSS Drive (1S1555)	AC
D503	RH-DX1006AFZZ	Surge Absorber (10E1)	AC
D504	VHD1S1555V/1G	Protector, Reverse Current for Auto Stop (1S1555)	AC
D505	VHD1S1555V/1G	Level Shift (1S1555)	AC
D506	VHD1S1555V/1G	Rectifier for Auto Stop Senser (1S1555)	AC
D507	VHD1S1555V/1G	Level Shift (1S1555)	AC
D508	VHD1S1555V/1G	Rectifier for Auto Stop Senser (1S1555)	AC
D701	VHVHV46-G//-1	Current Regulator (HV46)	AC
D702	VHD10E1////-1	Protector Regulator (10E1)	AC
D703, D704, D705	VHD10E1////-1	Rectifier (10E1)	AC
D706, D707, D708, D709	RH-DX1006AFZZ	Rectifier (10E1)	AC
D710, D711, D712	VHD10E1////-1	Rectifier (10E1)	AC
D713, D714, D715, D716	RH-DX1006AFZZ	Rectifier (10E1)	AC
D717, D718, D719, D720	VHD1S2473//-1	Protector, Reverse Current (1S2473)	AB
D801, D802	VHD1N60////-1	Dolby NR Time Constant Control	AB
D803, D804, D805, D806, D807, D808	VHD1N60////-1	Rectifier, ALC and Level Meter	AB
D809, D810, D811, D812, D813, D814	VHD1S2473//-1	Switching, Record Equalizer (1S2473)	AB
D815, D816, D817, D818, D819, D820, D821, D822, D823, D824	VHD1S2473//-1	Protector, Reverse Current (1S2473)	AB

REF. NO.	PART NO.	DESCRIPTION	CODE
ZD701	RH-IX1048AFZZ	33V Zener (μPC574J)	AH
ZD702	VHERD3R9FC1-1	3.9V Zener (RD3.9FC)	AE
ZD703	VHEHZ16////-1	16V Zener (HZ16)	AC
	COILS		
L101	VP-LH100M0000	10μH, Choke	AB
L102	RCILZ0052AFZZ	18μH, Phase Shift	AB
L103, L104	VP-LH100M0000	10μH, Choke	AB
L105, L106	RCILI0011SGZZ	19kHz, Law Pass Filter	AG
L107	VP-LH100M0000	10μH, Choke	AB
L108	VP-LH8R2M0000	8.2μH, Choke	AB
L109	RCILA0416AFZZ	Antenna (LW and MW)	AN
L301, L302	VP-LH470M0000	47μH, Spurious	AB
L303	RCILA0052AGZZ	SW Antenna	AD
L304	RCILB0391AFZZ	SW Oscillator	AE
L305	RCILB0427AFZZ	MW Oscillator	AD
L306	RCILB0388AFZZ	LW Oscillator	AD
L701, L702	VP-LH101M0000	100μH, Choke	AB
L801, L802, L803, L804, L805, L806	RCILZ0019AGZZ	6.8mH, Record Equalizer	AD
L807	RCILB0419AFZZ	Bias Oscillator	AE
L809, L810	RCILB0420AFZZ	Bias Step up	AE
L811, L812	RCILL0057AFZZ	15kHz, LPF for Dolby NR	AF
L813, L814	RCILL0054AFZZ	15kHz, LPF for Dolby NR	AG
	TRANSFORMERS		
T51	RTRNP0511AFZZ	Power	BK
T101	RCILD0055AFZZ	Quadrature	AE
T102	RCILD0056AFZZ	Quadrature	AE
T103	RCILI0209AFZZ	AM IFT (455kHz)	AH
T104	RCILI0222AFZZ	IF Trap Filter	AD
T105	RCILI0219AFZZ	AM IFT (455kHz)	AE
	CERAMIC FILTERS		
CF1, CF2	RFILF0009AFZZ	FM IF Filter	AE
	CONTROLS		
VC1 (A, B)	RVC-A0050AFZZ	Variable Tuning Gang	AX
TC301	RTO-H1053AFZZ	Trimmer, SW OSC	AC
TC302	RTO-H1007AFZZ	Trimmer, SW ANT	AC
TC303 (A, B)	RTO-H2051AFZZ	Trimmer Ass'y A: MW OSC B: LW OSC	AE

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
TC305	RTO-H1007AFZZ	Trimmer, MW ANT	AC
TC306	RTO-H1007AFZZ	Trimmer, LW ANT	AC
VR101	RVR-M0103AFZZ	6.8K ohm (B) VCO Adjust	AC
VR102	RVR-M0012AFZZ	1K ohm (B) Separation Adjust	AC
VR103	RVR-M0080AGZZ	22K ohm (B) Frequency Low Adjust	AG
VR104	RVR-M0065AGZZ	4.7K ohm (B) Frequency High Adjust	AF
VR105	RVR-M0128AFZZ	20K ohm (B) U-FM Meter Adjust	AC
VR106	RVR-M0126AFZZ	5K ohm (B) U-FM Meter Adjust	AC
VR401	RVR-Z0058AFZZ	100K ohm (B), U1 Pre-set Tuning	AG
VR402	RVR-Z0058AFZZ	100K ohm (B), U2 Pre-set Tuning	AG
VR403	RVR-Z0058AFZZ	100K ohm (B), U3 Pre-set Tuning	AG
VR404	RVR-Z0058AFZZ	100K ohm (B), U4 Pre-set Tuning	AG
VR405	RVR-Z0058AFZZ	100K ohm (B), U5 Pre-set Tuning	AG
VR406	RVR-M0075AGZZ	2.2K ohm (B) FM Muting Adjust	AF
VR601, VR602	RVR-P0054AFZZ	50K ohm (A) Record Level	AG
VR603	RVR-Q0051AFZZ	100K ohm (B) Balance	AH
VR604 (A, B)	RVR-Q0052AFZZ	100K ohm (B) Volume	AL
VR605 (A, B)	RVR-P0060AFZZ	50K ohm (A) Treble	AK
VR606 (A, B)	RVR-P0060AFZZ	50K ohm (A) Bass	AK
VR801, VR802	RVR-M0093AGZZ	10K ohm (B) Playback Sensitivity Adjust	AC
VR803, VR804	RVR-M0127AFZZ	10K ohm (B) Level Meter Sensitivity Adjust	AC
VR805, VR806	RVR-M0127AFZZ	10K ohm (B) Overall Sensitivity Adjust	AC
VR807, VR808	RVR-M0128AFZZ	20K ohm (B) Overall Sensitivity Adjust	AC
VR809, VR810	RVR-M0127AFZZ	10K ohm (B) Overall Sensitivity Adjust	AC
VR811, VR812	RVR-M0155AFZZ	5K ohm (B) Bias Adjust	AC

ELECTROLYTIC CAPACITORS

C110	VCAAAU1EB474K	.47MFD, 25V, ±10%, Aluminum	AC
C114	VCEAAU1HW105A	1MFD, 50V, +75 −10%	AB
C115	VCEAAU1EW475A	4.7MFD, 25V, +75 −10%	AB
C117	VCEAAU1VW107Y	100MFD, 35V, +50 −10%	AD
C119	VCAAAU1EB224K	.22MFD, 25V, ±10%, Aluminum	AC
C120	VCAAAU1EB474K	.47MFD, 25V, ±10%, Aluminum	AC
C125	VCEAAU1EW336Y	33MFD, 25V, +50 −10%	AC
C127	VCEAAU1VW107Y	100MFD, 35V, +50 −10%	AD
C128, C129	VCEAAU1EW335A	3.3MFD, 25V, +75 −10%	AB
C133	VCEAAU1AW107Y	100MFD, 10V, +50 −10%	AB
C137	VCEAAU1EW475A	4.7MFD, 25V, +75 −10%	AB
C145	VCEAAU1VW107Y	100MFD, 35V, +50 −10%	AD
C147, C148	VCEAAU1EW335A	3.3MFD, 25V, +75 −10%	AB
C152	VCAAAU1EB104K	1MFD, 25V, ±10%, Aluminum	AC
C154	VCEAAU1EW227Y	220MFD, 25V, +50 −10%	AC
C155, C156	VCEALU1EW475M	4.7MFD, 25V, ±20%, Low Noise	AD
C157, C158	VCEAAU1CW106Y	10MFD, 16V, +50 −10%	AB
C159, C160	VCEAAU1CW336Y	33MFD, 16V, +50 −10%	AC
C169, C170	VCEAAU1HW105A	1MFD, 50V, +75 −10%	AB
C171, C172	VCEALU1EW475M	4.7MFD, 25V, ±20%, Low Noise	AD
C173, C174	VCEAAU1CW106Y	10MFD, 16V, +50 −10%	AB
C175, C176	VCEAAU1CW336Y	33MFD, 16V, +50 −10%	AC
C181, C182	VCEALU1HW474M	47MFD, 50V, ±20%, Low Noise	AB
C184	VCEAAU1EW227Y	220MFD, 25V, +50 −10%	AC
C191	VCEAAU1HW105A	1MFD, 50V, +75 −10%	AB
C322	VCEAAU1HW105A	1MFD, 50V, +75 −10%	AB
C407	VCEAAU1HW105A	1MFD, 50V, +75 −10%	AB
C501	VCEAAU1HW105A	1MFD, 50V, +75 −10%	AB
C502	VCEALU1HW475M	4.7MFD, 50V, ±20%, Low Noise	AD
C503	VCEAAU1CW336Y	33MFD, 16V, +50 −10%	AC
C504	VCEALU1HW474M	.47MFD, 50V, ±20%, Low Noise	AD
C505	VCEAAU1CW336Y	33MFD, 16V, +50 −10%	AC
C506	VCEAAU1AW107Y	100MFD, 10V, +50 −10%	AB
C507	VCEAAU1AW336Y	33MFD, 10V, +50 −10%	AB
C508	VCEAAU1CW107Y	100MFD, 16V, +50 −10%	AB
C509	VCEAAU1HW475A	4.7MFD, 50V, +75 −10%	AB
C601, C602	VCEALU1HW224M	.22MFD, 50V, ±20%, Low Noise	AB
C605, C606	VCEAAU1CW336Y	33MFD, 16V, +50 −10%	AB
C613, C614	VCEALU1HW224M	.22MFD, 50V, ±20%, Low Noise	AB
C615, C616	VCEALU1HW225M	2.2MFD, 50V, ±20%, Low Noise	AD
C619, C620	VCEAAU1EW335A	3.3MFD, 25V, +75 −10%	AB
C623	VCEAAU1VW107Y	100MFD, 35V, +50 −10%	AD
C701, C702	VCEALU1HW224M	.22MFD, 50V, ±20%, Low Noise	AB
C705, C706	VCEAAU1HW107Y	100MFD, 50V, +50 −10%	AD
C707, C708	VCEAAU1HW107Y	100MFD, 50V, +50 −10%	AD
C711, C712	VCEASU1EW476Y	47MFD, 25V, +50 −10%, Non Blow up	AC
C713, C714	VCEASU1VW228Y	2200MFD, 35V, +50 −10% Non Blow up	AH
C717	VCEAAU1JW107Y	100MFD, 63V, +50 −10%	AD
C718	VCEAAU1HW105A	1MFD, 50V, +75 −10%	AB
C719	VCEAAU1HW476Y	47MFD, 50V, +50 −10%	AC
C720	VCEAAU1JW337Y	330MFD, 63V, +50 −10%	AF
C721	VCEAAU1VW107Y	100MFD, 35V, +50 −10%	AD
C723	VCEAAU1VW107Y	100MFD, 35V, +50 −10%	AD

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
C725	VCEAAU1EW107Y	100MFD, 25V, +50 −10%	AC
C726	VCEAAU1VW227Y	220MFD, 35V, +50 −10%	AD
C727	VCEAAU1VW107Y	100MFD, 35V, +50 −10%	AD
C728	VCEAAU1VW107Y	100MFD, 35V, +50 −10%	AD
C729	VCEAAU1VW107Y	100MFD, 35V, +50 −10%	AD
C730	VCEAAU1CW108Y	1000MFD, 16V, +50 −10%	AE
C733	VCEAAU1VW108Y	1000MFD, 35V, +50 −10%	AG
C735	VCEAAU1JW228Y	2200MFD, 63V, +50 −10%	AP
C737	VCEAAU1HW107Y	100MFD, 50V, +50 −10%	AD
C738	VCEAAU1VW228Y	2200MFD, 35V, +50 −10%	AK
C803, C804	VCEALU1EW475M	4.7MFD, 25V, ±20%, Low Noise	AD
C805, C806	VCEAAU1CW226Y	22MFD, 16V, +50 −10%	AB
C807, C808	VCEAAU1AW476Y	47MFD, 10V, +50 −10%	AB
C813, C814	VCEAAU1CW106Y	10MFD, 16V, +50 −10%	AB
C817, C818	VCEALU1HW104M	.1MFD, 50V, ±20%, Low Noise	AB
C819, C820	VCEALU1HW105M	1MFD, 50V, +75 −10%, Low Noise	AD
C821, C822	VCEALU1HW105M	1MFD, 50V, ±20%, Low Noise	AD
C823, C824	VCEAAU1CW477Y	470MFD, 16V, +50 −10%	AD
C825, C826	VCEAAU1AW227Y	220MFD, 10V, +50 −10%	AC
C827, C828	VCEAAU1CW106Y	10MFD, 16V, +50 −10%	AB
C829, C830	VCAAAU1EB104K	.1MFD, 25V, ±10%, Aluminum	AC
C831, C832	VCAAAU1EB334K	.33MFD, 25V, ±10%, Aluminum	AC
C833, C834, C835, C836, C837, C838, C841, C842	VCEAAU1CW106Y	10MFD, 16V, +50 −10%	AB
C849, C850	VCEAAU1EW335A	3.3MFD, 25V, +75 −10%	AB
C851, C852, C853, C854 C857, C858	VCEAAU1CW106Y	10MFD, 16V, +50 −10%	AB
C871	VCEAAU1VW107Y	100MFD, 35V, +50 −10%	AD
C872	VCEAAU0JW337Y	330MFD, 6.3V, +50 −10%	AC
C873	VCEAAU1CW227Y	220MFD, 16V, +50 −10%	AC
C878	VCEAAU1CW106Y	10MFD, 16V, +50 −10%	AB
C879	VCEAAU1CW107Y	100MFD, 16V, +50 −10%	AC
C882, C885	VCEAAU1EW227Y	220MFD, 25V, +50 −10%	AC
C890	VCEAAU1EW475A	4.7MFD, 25V, +75 −10%	AB
C892, C895, C896, C897	VCEAAU1CW106Y	10MFD, 16V, +50 −10%	AB

REF. NO.	PART NO.	DESCRIPTION	CODE
		CAPACITORS	
		(Unless otherwise specified capacitors are 50V, +80 −20%, Ceramic type).	
C51	Not Available	Player Parts 024	
C52	VCPOAT3AC473M	.047MFD, 1000V, Oil, ±20%	
C101	VCKZPU1HF472Z	.0047MFD	
C102	VCKZPU1HF223Z	.022MFD	
C103	VCCSPU1HL100C	10PF, 50V, ±.25PF, Ceramic	
C104	VCKZPU1HF103Z	.01MFD	
C105, C106, C107, C108	VCKZPU1HF473Z	.047MFD	
C109	VCCSPU1HL820K	82PF, 50V, ±10%, Ceramic	
C111, C112, C113	VCKZPU1HF473Z	.047MFD	
C116	VCQSMU1HS152J	1500PF, 50V, ±5%, Styrol	AB
C118	VCQYKU1HM473J	.047MFD, 50V, ±5%, Mylar	AC
C121, C122	VCQYKU1HM102J	.001MFD, 50V, ±5%, Mylar	AC
C123, C124	VCQYKU1HM153J	.015MFD, 50V, ±5%, Mylar	AC
C126	VCKZPU1HF473Z	.047MFD	
C130, C131	VCQYKU1HM472J	.0047MFD, 50V, ±5%, Mylar	AC
C132	VCKZPU1HF223Z	.022MFD	
C134, C135	VCKZPU1HF223Z	.022MFD	
C136	VCKZPU1HF104Z	.1MFD	
C138	VCKZPU1HF473Z	.047MFD	
C139	VCCSPU1HL470J	47PF, 50V, ±5%, Ceramic	
C140	VCKZPU1HF103Z	.01MFD	
C141, C142, C143	VCKZPU1HF473Z	.047MFD	
C146	VCQYKU1HM682K	.0068MFD, 50V, ±10%, Mylar	AB
C149, C150	VCKZPU1HF103Z	.01MFD	
C151	VCKZPU1HF102P	.001MFD, 50V, +100 −0%, Ceramic	
C153	VCQYKU1HM183J	.018MFD, 50V, ±5%, Mylar	AC
C161, C162	VCCSPU1HL471K	470PF, 50V, ±10%, Ceramic	
C163, C164	VCQYKU1HM222J	.0022MFD, 50V, ±5%, Mylar	AB
C165, C166	VCQYKU1HM822J	.0082MFD, 50V, ±5%, Mylar	AC
C167, C168	VCCSPU1HL151K	150PF, 50V, ±10%, Ceramic	
C177, C178	VCKZPU1HF102P	.001MFD, 50V, +100 −0%, Ceramic	
C179, C180	VCCSPU1HL151K	150PF, 50V, ±10%, Ceramic	
C185, C186	VCCSPU1HL560K	56PF, 50V, ±10%, Ceramic	
C187, C188	VCQYKU1HM152K	.0015MFD, 50V, ±10%, Mylar	
C189, C190	VCQYKU1HM152K	.0015MFD, 50V, ±10%, Mylar	
C192	VCKZPU1HF473Z	.047MFD	
C193, C194	VCCSPU1HL331K	330PF, 50V, ±10%, Ceramic	
C301	VCCSPU1HL330J	33PF, 50V, ±5%, Ceramic	

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
C302	VCCSPU1HL680J	68PF, 50V, ±5%, Ceramic	
C303, C304	VCKZPU1HF473Z	.047MFD	
C305	VCQSMT1HS472J	4700PF, 50V, ±5%, Styrol	AC
C306	VCKZPU1HF102P	.001MFD, 50V, +100 −0%, Ceramic	
C307	VCCSPU1HL150J	15PF, 50V, ±5%, Ceramic	
C308	VCKZPU1HF473Z	.047MFD	
C309	VCQSMT1HS471J	470PF, 50V, ±5%, Styrol	AB
C310	VCCUPU1HJ180J	18PF, 50V, ±5%, Ceramic	
C311	VCCUPU1HJ100C	10PF, 50V, ±.25PF, Ceramic	
C312	VCCUPU1HJ560J	56PF, 50V, ±5%, Ceramic	
C313	VCQSMU1HS181J	180PF, 50V, ±5%, Styrol	AB
C314	VCCSPU1HL6R0C	6PF, 50V, ±.25PF, Ceramic	
C315	VCCSPU1HL180J	18PF, 50V, ±5%, Ceramic	
C317, C318	VCCSPU1HL681K	680PF, 50V, ±10%, Ceramic	
C319, C320	VCQYKU1HM333K	.033MFD, 50V, ±10%, Mylar	AB
C321	VCKZPU1HF103Z	.01MFD	
C323	VCCSPU1HL8R0C	8PF, 50V, ±.25PF, Ceramic	
C324	VCCCPU1HH6R0C	6PF, 50V, ±.25PF, Ceramic	
C401, C402, C403, C404, C405, C406	VCKZPU1HF102P	.001MFD, 50V, +100 −0%, Ceramic	
C408	VCKZPU1HF473Z	.047MFD	
C603, C604	VCCSPU1HL4R0C	4PF, 50V, ±.25PF, Ceramic	
C607, C608	VCQYKU1HM472K	.0047MFD, 50V, ±10%, Mylar	AB
C609, C610	VCQYKU1HM223K	.022MFD, 50V, ±10%, Mylar	AB
C611, C612	VCQYKU1HM473K	.047MFD, 50V, ±10%, Mylar	AC
C617, C618	VCCSPU1HL151K	150PF, 50V, ±10%, Ceramic	
C621, C622	VCQYKU1HM152K	.0015MFD, 50V, ±10%, Mylar	
C703, C704	VCQYKU1HM152K	.0015MFD, 50V, ±10%, Mylar	
C709, C710	VCCSPU1HL121K	120PF, 50V, ±10%, Ceramic	
C715, C716	VCQYKU1HM473K	.047MFD, 50V, ±10%, Mylar	AC
C722, C724	VCKZPU1HF473Z	.047MFD	
C731, C732, C734, C736	VCKZPU1MF333P	.033MFD, 75V, +100 −0%, Ceramic	
C739, C740	VCKZPU1HF473Z	.047MFD	
C741, C742	VCCSPU1HL331K	330PF, 50V, ±10%, Ceramic	
C801, C802	VCCSPU1HL391K	390PF, 50V, ±10%, Ceramic	
C809, C810	VCQYKU1HM102J	.001MFD, 50V, ±5%, Mylar	AC
C811, C812	VCCSPU1HL151K	150PF, 50V, ±10%, Ceramic	
C815, C816	VCQYKU1HM123J	.012MFD, 50V, ±5%, Mylar	AC
C839, C840	VCQYKU1HM472J	.0047MFD, 50V, ±5%, Mylar	AC
C843, C844	VCQYKU1HM273J	.027MFD, 50V, ±5%, Mylar	AC
C845, C846	VCQYKU1HM473J	.047MFD, 50V, ±5%, Mylar	AC
C847, C848	VCQYKU1HM562J	.0056MFD, 50V, ±5%, Mylar	AC
C859, C860	VCQYKU1HM183J	.018MFD, 50V, ±5%, Mylar	AC
C861, C862	VCQYKU1HM223J	.022MFD, 50V, ±5%, Mylar	AC
C863, C864	VCQYKU1HM683J	.068MFD, 50V, ±5%, Mylar	AD
C865, C866	VCQYKU1HM273J	.027MFD, 50V, ±5%, Mylar	AC
C867, C868	VCQYKU1HM123J	.012MFD, 50V, ±5%, Mylar	AC
C869, C870	VCQYKU1HM273J	.027MFD, 50V, ±5%, Mylar	AC
C875	VCQYKU1HM223J	.022MFD, 50V, ±5%, Mylar	AB
C876	VCKYPU1HB102K	.001MFD, 50V, ±10%, Ceramic	
C877	VCCSPU1HL101K	100PF, 50V, ±10%, Ceramic	
C880	VCQYKU1HM223J	.022MFD, 50V, ±5%, Mylar	AC
C881	VCQYKU1HM473J	.047MFD, 50V, ±5%, Mylar	AC
C883, C884	VCQYKU1HM123J	.012MFD, 50V, ±5%, Mylar	AC
C886	VCQYKU1HM223J	.022MFD, 50V, ±5%, Mylar	AB
C887	VCKZPU1HF473Z	.047MFD	
C888, C889	VCKYPU1HB821K	820PF, 50V, ±10%, Ceramic	
C891	VCQYKU1HM103M	.01MFD, 50V, ±20%, Mylar	AB
C893, C894	VCQYKU1HM152K	.0015MFD, 50V, ±10%, Mylar	
C898	VCKZPU1HF473Z	.047MFD	

RESISTORS

(Unless otherwise specified resistors are 1/4W, ±5%, Carbon type)

R51, R52	VRC-MT2HG181K	180 ohm, 1/2W, ±10%, Carbon
R101	VRD-ST2EE100J	10 ohm
R102	VRD-ST2EE104J	100K ohm
R103	VRD-ST2EE223J	22K ohm
R104	VRD-ST2EE562J	5.6K ohm
R105	VRD-ST2EE102J	1K ohm
R106, R107	VRD-ST2EE331J	330 ohm
R108	VRD-ST2EE104J	100K ohm
R109	VRD-SU2EY224J	220K ohm
R110	VRD-ST2EE274J	270K ohm
R120	VRD-ST2EE152J	1.5K ohm
R121	VRD-ST2EE562J	5.6K ohm
R122	VRD-ST2EE222J	2.2K ohm
R123	VRD-ST2EE104J	100K ohm
R124	VRD-ST2EE183J	18K ohm
R125	VRD-ST2EE472J	4.7K ohm
R126	VRD-ST2EE103J	10K ohm
R127	VRD-ST2EE183J	18K ohm
R128	VRD-ST2EE123J	12K ohm
R129	VRD-ST2EE223J	22K ohm
R130	VRD-ST2EE561J	560 ohm
R131	VRD-ST2EE221J	220 ohm

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
R132	VRD-ST2EE124J	120K ohm	
R133	VRD-ST2EE104J	100K ohm	
R134	VRD-ST2EE822J	8.2K ohm	
R135	VRD-ST2EE681J	680 ohm	
R136, R137	VRD-ST2EE682J	6.8K ohm	
R138	VRD-ST2EE332J	3.3K ohm	
R139	VRD-ST2EE104J	100K ohm	
R140, R141	VRD-ST2EE562J	5.6K ohm	
R142, R143	VRD-ST2EE333J	33K ohm	
R144	VRD-ST2EE561J	560 ohm	
R145	VRD-ST2EE121J	120 ohm	
R147	VRD-ST2EE333J	33K ohm	
R148	VRD-ST2EE122J	1.2K ohm	
R149	VRD-ST2EE334J	330K ohm	
R150	VRD-ST2EE105J	1 Meg ohm	
R151	VRD-ST2EE100J	10 ohm	
R152	VRD-ST2EE562J	5.6K ohm	
R153	VRD-ST2EE151J	150 ohm	
R154	VRG-ST2EA330J	33 ohm, Fusible	AB
R155	VRD-ST2EE222J	2.2K ohm	
R156	VRD-ST2EE562J	5.6K ohm	
R157	VRD-ST2EE563J	56K ohm	
R158	VRD-ST2EE103J	10K ohm	
R159	VRD-ST2EE332J	3.3K ohm	
R160	VRD-ST2EE103J	10K ohm	
R161	VRD-ST2EE332J	3.3K ohm	
R162	VRD-ST2EE100J	10 ohm	
R163, R164	VRD-ST2EE105J	1 Meg ohm	
R165, R166	VRD-ST2EE103J	10K ohm	
R167	VRD-ST2EE273J	27K ohm	
R168	VRG-ST2EA101J	100 ohm, Fusible	AB
R169, R170	VRD-ST2EE104J	100K ohm	
R171	VRD-ST2EE275J	2.7 Meg ohm	
R173, R174	VRD-ST2EE182J	1.8K ohm	
R175, R176	VRD-ST2EE222J	2.2K ohm	
R177, R178	VRD-ST2EE104J	100K ohm	
R179, R180	VRD-ST2EE563J	56K ohm	
R181, R182	VRD-ST2EE333J	33K ohm	
R183, R184	VRD-ST2EE394J	390K ohm	
R185, R186	VRD-ST2EE154J	150K ohm	
R187, R188	VRD-ST2EE153J	15K ohm	
R189, R190	VRD-ST2EE104J	100K ohm	
R191, R192	VRD-ST2EE123J	12K ohm	
R193, R194	VRD-ST2EE821J	820 ohm	
R195, R196	VRD-ST2EE104J	100K ohm	
R197	VRD-ST2EE222J	2.2K ohm	
R198	VRD-ST2EE222J	2.2K ohm	
R199, R200	VRD-ST2EE563J	56K ohm	
R201, R202	VRD-ST2EE823J	82K ohm	
R203, R204	VRD-ST2EE560J	56 ohm	
R205, R206	VRD-ST2EE153J	15K ohm	
R207	VRG-ST2EA101J	100 ohm, Fusible	AB
R209, R210	VRD-ST2EE560J	56 ohm	
R211, R212	VRD-ST2EE273J	27K ohm	
R213, R214	VRD-ST2EE333J	33K ohm	
R215, R216	VRD-ST2EE224J	220K ohm	
R217	VRD-ST2EE561J	560 ohm	
R301	VRD-ST2EE100J	10 ohm	
R302	VRD-ST2EE223J	22K ohm	
R303	VRD-ST2EE822J	8.2K ohm	
R304	VRD-ST2EE102J	1K ohm	
R305	VRD-ST2EE222J	2.2K ohm	
R306	VRD-SU2EY562J	5.6K ohm	
R307	VRD-ST2EE223J	22K ohm	
R308	VRD-ST2EE224J	220K ohm	
R309	VRD-SU2EY104J	100K ohm	
R311, R312	VRD-ST2EE562J	5.6K ohm	
R313, R314, R315, R316	VRD-ST2EE123J	12K ohm	
R319	VRD-ST2EE122J	1.2K ohm	
R320	VRD-ST2EE333J	33K ohm	
R401	VRD-ST2EE273J	27K ohm	
R402	VRD-ST2EE335J	3.3 Meg ohm	
R403	VRC-MT2HG106K	10 Meg ohm, 1/2W, ±10%, Carbon	
R404	VRD-ST2EE335J	3.3 Meg ohm	
R405	VRC-MT2HG106K	10 Meg ohm, 1/2W, ±10%, Carbon	
R406	VRD-ST2EE471J	470 ohm	
R407	VRD-ST2EE335J	3.3 Meg ohm	
R408	VRD-ST2EE122J	1.2K ohm	
R409	VRC-MT2HG106K	10 Meg ohm, 1/2W, ±10%, Carbon	
R410	VRD-ST2EE122J	1.2K ohm	
R411	VRD-ST2EE335J	3.3 Meg ohm	
R412	VRC-MT2HG106K	10 Meg ohm, 1/2W, ±10%, Carbon	
R413	VRD-ST2EE335J	3.3 Meg ohm	
R414	VRD-ST2EE122J	1.2K ohm	
R415	VRC-MT2HG106K	10 Meg ohm, 1/2W, ±10%, Carbon	
R416	VRD-ST2EE335J	3.3 Meg ohm	
R417	VRC-MT2HG106K	10 Meg ohm, 1/2W, ±10%, Carbon	
R418, R419	VRD-ST2EE122J	1.2K ohm	
R420	VRD-ST2EE104J	100K ohm	
R421	VRD-ST2EE224J	220K ohm	
R422	VRD-ST2EE822J	8.2K ohm	

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
R423	VRD-ST2EE332J	3.3K ohm	
R424	VRD-ST2EE333J	33K ohm	
R501	VRD-ST2EE102J	1K ohm	
R502	VRD-ST2EE682J	6.8K ohm	
R503	VRD-ST2EE103J	10K ohm	
R504	VRD-ST2EE221J	220 ohm	
R505	VRD-ST2EE333J	33K ohm	
R506	VRD-ST2EE102J	1K ohm	
R507	VRD-ST2EE561J	560 ohm	
R508	VRD-ST2EE102J	1K ohm	
R509, R510	VRD-ST2EE224J	220K ohm	
R511	VRD-ST2EE333J	33K ohm	
R512	VRD-ST2EE222J	2.2K ohm	
R513	VRD-ST2EE123J	12K ohm	
R514	VRD-ST2EE472J	4.7K ohm	
R515	VRD-ST2EY101J	100 ohm	
R601, R602	VRD-ST2EE333J	33K ohm	
R603, R604	VRD-ST2EE124J	120K ohm	
R606	VRG-ST2EA101J	100 ohm, Fusible	AB
R607, R608	VRD-ST2EE222J	2.2K ohm	
R609, R610	VRD-ST2EE104J	100K ohm	
R613, R614	VRD-ST2EE102J	1K ohm	
R615, R616	VRD-ST2EE822J	8.2K ohm	
R617, R618	VRD-ST2EE182J	1.8K ohm	
R619, R620	VRD-ST2EE560J	56 ohm	
R621, R622	VRD-ST2EE103J	10K ohm	
R623, R624	VRD-ST2EE152J	1.5K ohm	
R625, R626	VRD-ST2EE681J	680 ohm	
R701, R702	VRD-ST2EE332J	3.3K ohm	
R703, R704	VRD-ST2EE224J	220K ohm	
R705, R706	VRG-ST2EA121J	120 ohm, Fusible	AB
R707, R708	VRD-ST2EE822J	8.2K ohm	
R709, R710	VRD-ST2EE4R7J	4.7 ohm	
R711, R712	VRD-ST2EE184J	180K ohm	
R713, R714	VRD-ST2EE274J	270K ohm	
R715	VRG-ST2EA101J	100 ohm, Fusible	AB
R716	VRD-ST2EE103J	10K ohm	
R717	VRD-ST2EE560J	56 ohm	
R718	VRD-ST2EE561J	560 ohm	
R719	VRD-ST2EE221J	220 ohm	
R720	VRC-MT2HG101K	100 ohm, 1/2W, ±10%, Carbon	
R721	VRC-MT2HG561K	560 ohm, 1/2W, ±10%, Carbon	
R722	VRG-ST2EA101J	100 ohm, Fusible	AB
R723	VRD-ST2EE471J	470 ohm	
R724	VRW-KT3HG102K	1K ohm, 5W, ±10%	AD
R726	VRD-ST2EE220J	22 ohm	
R727	VRD-ST2EE182J	1.8K ohm	
R801, R802	VRD-ST2EE101J	100 ohm	
R803, R804	VRD-ST2EE105J	1 Meg ohm	
R805, R806	VRD-ST2EE823J	82K ohm	
R807, R808	VRD-ST2EE821J	820 ohm	
R809, R810	VRD-ST2EE222J	2.2K ohm	
R811, R812	VRD-ST2EE104J	100K ohm	
R813, R814	VRD-ST2EE563J	56K ohm	
R815, R816	VRD-ST2EE395J	3.9 Meg ohm	
R817, R818	VRD-ST2EE104J	100K ohm	
R819, R820	VRD-ST2EE223J	22K ohm	
R821, R822	VRD-ST2EE562J	5.6K ohm	
R823, R824	VRD-ST2EE472J	4.7K ohm	
R825, R826	VRD-ST2EE473J	47K ohm	
R827, R828	VRD-ST2EE333J	33K ohm	
R829, R830	VRD-ST2EE223J	22K ohm	
R831, R832	VRD-ST2EE105J	1 Meg ohm	
R833, R834	VRD-ST2EE182J	1.8K ohm	
R835, R836	VRD-ST2EE222J	2.2K ohm	
R837, R838	VRD-ST2EE123J	12K ohm	
R839, R840	VRD-ST2EE102J	1K ohm	
R841, R842	VRD-ST2EE102J	1K ohm	
R843, R844	VRD-ST2EE154J	150K ohm	
R845, R846	VRD-ST2EE274J	270K ohm	
R847, R848	VRD-ST2EE684J	680K ohm	
R849, R850	VRD-ST2EE392J	3.9K ohm	
R851, R852	VRD-ST2EE332J	3.3K ohm	
R853, T854	VRD-ST2EE473J	47K ohm	
R855, R856	VRD-ST2EE104J	100K ohm	
R857, R858, R859, R860	VRD-ST2EE181J	180 ohm	
R861, R862	VRD-ST2EE472J	4.7K ohm	
R863, R864	VRD-ST2EE103J	10K ohm	

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
R865, R866, R867, R868, R869, R870	VRD-ST2EE223J	22K ohm	
R871, R872	VRD-ST2EE124J	120K ohm	
R873, R874	VRD-ST2EE105J	1 Meg ohm	
R875, R876	VRD-ST2EE273J	27K ohm	
R877	VRD-ST2EE822J	8.2K ohm	
R878	VRD-ST2EE822J	8.2K ohm	
R879, R880	VRD-ST2EE122J	1.2K ohm	
R881, R882	VRD-ST2EE182J	1.8K ohm	
R883, R884	VRD-ST2EE103J	10K ohm	
R885, R886	VRD-ST2EE680J	68 ohm	
R887, R888	VRD-ST2EE123J	12K ohm	
R889, R890	VRD-ST2EE681J	680 ohm	
R891, R892	VRD-ST2EE330J	33 ohm	
R893, R894	VRD-ST2EE123J	12K ohm	
R895, R896	VRD-ST2EE392J	3.9K ohm	
R897, R898	VRD-ST2EE100J	10 ohm	
R899, R900	VRD-ST2EE123J	12K ohm	
R901	VRD-ST2EE473J	47K ohm	
R902	VRD-ST2EE821J	820 ohm	
R903	VRD-ST2EE473J	47K ohm	
R904	VRD-ST2EE472J	4.7K ohm	
R905, R906	VRD-ST2EE124J	120K ohm	
R907, R908	VRD-ST2EE560J	56 ohm	
R909, R910	VRC-MT2HG471K	470 ohm, 1/2W, ±10%, Carbon	
R911, R912	VRD-ST2EE473J	47K ohm	
R913	VRD-ST2EE223J	22K ohm	
R914	VRD-ST2EE224J	220K ohm	
R915	VRD-ST2EE224J	220K ohm	
R916	VRD-ST2EE683J	68K ohm	
R917	VRD-ST2EE154J	150K ohm	
R918	VRD-ST2EE222J	2.2K ohm	
R919	VRS-PT3AB151K	150 ohm, 1W, ±10%, Metal Oxide Film	
R920	VRD-ST2EE563J	56K ohm	
R921	VRC-MT2HG331K	330 ohm, 1/2W, ±10%, Carbon	
R922	VRD-ST2EE563J	56K ohm	
R923	VRC-MT2HG331K	330 ohm, 1/2W, ±10%, Carbon	
R924	VRD-ST2EE563J	56K ohm	
R925	VRD-ST2EE682J	6.8K ohm	
R926, R927	VRD-ST2EE183J	18K ohm	
R928	VRD-ST2EE100J	10 ohm	
R929	VRD-ST2EE473J	47K ohm	
R930	VRD-ST2EE563J	56K ohm	
R931	VRD-ST2EE471J	470 ohm	
R932	VRD-ST2EE273J	27K ohm	
R933	VRD-ST2EE473J	47K ohm	
R934, R935, R936	VRD-ST2EE102J	1K ohm	
R937	VRD-ST2EE560J	56 ohm	
R939	VRD-ST2EE122J	1.2K ohm	
R940	VRD-ST2EE1R0J	1 ohm	

PLAYER PARTS

001	91Z846388	Cabinet, Player	
002	91Z895637-1	Spring, Leg	
003	91Z895637-2	Spring, Leg	
004	91Z895637-3	Spring, Leg	
005	91Z895637-4	Spring, Leg	
006	91Z890432-4	Cushion, Leg	
007	91Z871173	Sub-chassis Ass'y	
008	91Z700514-1	Bearing Ass'y, Turntable	
009	91Z895248	Return Gear Ass'y	
010	91Z894901	Plate, Clutch	
011	91Z894902	Guide, Clutch	
012	91Z870933	Arm, Operation	
013	91Z870932	Base, Operation Arm	
014	91Z890218	Lever, Kick	
015	91Z891191	Spring, Kick Lever	
016	91Z895619	Operation Plate Ass'y	
017	91Z895073	Shaft, Eccentric	
018	91Z894905	Arm, Switching	
019	91Z895252	Spring, Switching Arm	
020	91Z895251	Spring, Operation Plate	
021	91Z891849	Terminal Strip (6 Pin)	
022	91Z894614	Switch, Motor (SW5)	
023	91Z703664-7	Connector Ass'y	
024	91Z890836-2	Capacitor, .047MFD, 1500WV, (C51)	
025	91Z894418-1	Connector Ass'y (CNS51)	
026	91Z893803	Insulator, Motor Switch (SW5)	
027	91Z895153	Plate, Motor Switch Retaining	
028	91Z890430-4	Rest Stand Ass'y	
029	91Z851188	Pick-up Ass'y	
030	91Z895330	Control Arm Ass'y	
031	91Z895473	Connector Ass'y (CNS702)	
032	91Z10002-51	Terminal Strip (5 Pin)	
033	91Z892488	Holder, Wire	
034	91Z631106	Motor Ass'y (M1)	
035	91Z894173	Bracket, Motor	
036	91Z703740-1A	Pulley (50Hz)	
	NPLYP0054AFH6	Pulley (60Hz)	
037	91Z702230	Cushion, Motor	
038	91Z825240	Washer, Motor Retaining	
039	91Z893842	Cam, Speed Selector	
040	91Z895598	Arm, Speed Selector	
041	91ZE-287680	Spring, Speed Selector Cam	
042	91Z890065-4	Shaft, Speed Selector	
043	91Z895583-2	Lever, Speed Selector	
044	91Z890065-3	Shaft, Operation	
045	91Z895583-1	Lever, Operation	
046	91Z890064	Arm, Operation Lever	

PARTS LIST

RE N	REF. NO.	PART NO.	DESCRIPTION	CODE
	241	LANGR0424AFZZ	Bracket, Power Switch	AB
047	242	LANGR0425AFZZ	Bracket, Touch Key	AE
048	243	LANGT0633AFZZ	Bracket, Tuning Shaft	AC
049	244	LANGT0634AFZZ	Bracket, Dial Scale (Right)	AD
050	245	LANGT0635AFZZ	Bracket, Dial Scale (Left)	AD
051	246	LANGT0639AFZZ	Bracket, Heatsink	AB
052	247	LBSHC0004AGZZ	Bushing, Mains Supply Cord (KEMA, SEMKO)	AC
053				
054		LBSHC0053AFZZ	Bushing, Mains Supply Cord (SEV, etc.)	AB
055				
	248	LBSHZ0053AFZZ	Bushing, Lamp (APSS/DOLBY NR/REC)	AA
	249	LCHSM0271AFZZ	Main Chassis	
101	250	LHLDC1052AFZZ	Holder, AM Antenna	AD
	251	LHLDW1067AFZZ	Band, Wire (60 mm)	AA
102	252	LHLDW1068AFZZ	Band, Wire (100 mm)	AA
103	253	LHLDW9002CEZZ	Holder, Wire	AA
104	254	LHLDW9003CEZZ	Holder, Wire	AA
105	255	LHLDZ1041AG00	Holder, FM STEREO Indicator	AB
106	256	LHLDZ3055AFZZ	Holder, Hinge	AE
107	257	LHLDZ8063AFZZ	Holder, Meter	AH
108	258	LPLTM0104AFZZ	Washer	AA
	259	LPLTZ0050AFZZ	Washer, Fiber	AA
109	260	LSTPZ0051AFZZ	Stopper, Hinge Arm	AB
110	261	LX-BZ0244AFFF	Shaft, Dial Cord Pulley (Small) (Refer to Fig. 5)	AA
111				
112	262	LX-BZ0246AFZZ	Screw, Turntable/Weight Retaining	AA
113				
	263	LX-HZ0053AFFD	Screw with Washer, Tuner PWB Retaining	
114				
115	264	MARMP0003AFZZ	Arm, Dust Cover (Right)	AD
116	265	MARMP0004AFZZ	Arm, Dust Cover (Left)	AD
117	266	MLEVF0614AFZZ	Lever, Cassette Holder Eject	AB
118	267	MLEVF0783AFZZ	Lever, Record (Refer to Fig. 52)	
119				
	268	MLEVP0025AG00	Lever, Cassette Holder Lock	AB
120	269	MSPRC0150AFFJ	Spring, Hinge	AC
121	270	MSPRD0174AFFJ	Spring, Hinge Base (Right)	AC
122	271	MSPRD0175AFFJ	Spring, Hinge Base (Left)	AC
123	272	MSPRP0129AFFW	Spring, Cassette Holder	AB
124	273	MSPRT0304AFFJ	Spring, Dial Cord (Refer to Fig. 5)	AA
125				
126	274	MSPRT0388AFFJ	Spring, Cassette Holder Lock	AA
	275	MSPRT0410AFFJ	Spring, Cassette Holder up	AB
127	276	NDRM-0002SGZZ	Drum, Dial Cord (Refer to Fig. 5)	AH
128	277	NPLYB0001SGZZ	Pulley, Dial Cord (Large)	AB
129	278	NPLYB0053AF00	Pulley, Dial Cord (Small) (Refer to Fig. 5)	AB
130				
131	279	NPLYC0101AFFD	Shaft, Dial Cord Pulley (Large) (Refer to Fig. 5)	AA
132				
133	280	NSFTD0177AFZZ	Shaft, Tuning	AL
134	281	PCOVU8106AFZZ	Cover, Lamp (APSS/DOLBY NR/REC)	AD
135				
136	282	PCOVU8107AFZZ	Cover, Dial Lamp	AB
137	283	PCUSF0005AF00	Cushion, Push Switch Knob	
138				
139				
140				
141				
142				
143				

REF. NO.	PART NO.	DESCRIPTION	CODE
284	PCUSF0006AF00	Cushion, Power Switch Knob	AA
285	PCUSG0080AF00	Cushion Rubber, Player Leg	AB
286	PFLT-0277AFZZ	Felt, Leg	AB
287	PFLT-0319AF00	Felt, Volume	AB
288	PFLT-0327AF00	Felt, FM Pre-set	AC
289	PGIDH0051AFZZ	Holder, Eject Lever	AA
290	PGUMM0061AG00	Cushion Rubber, Cabinet Top	AB
291	PGUMM0107AF00	Cushion Rubber, Cassette Holder	AB
292	PRDAR0101AFFW	Heatsink, Transistor	AB
293	PRDAR0151AFZZ	Heatsink (Large), IC	AT
294	PRDAR0158AFZZ	Heatsink (Small), IC	AN
295	PREFL0064AFZZ	Bracket, Dial Lamp	
296	PSLDC3064AFZZ	Shield, Tone PWB	AF
297	PSLDH3051AFZZ	Shield, Cabinet Top	AC
298	PSLDM7107AFZZ	Shield, Cabinet Bottom (Power PWB)	AC
299	PSPAI0122AFZZ	Spacer, Tape Deck PWB Bracket (Left)	AA
300	PSPAZ0068AFZZ	Spacer, Turntable Retaining	AF
	PSPAZ0071AFZZ	Spacer, Player Cabinet Back	
	PSPAZ0073AFZZ	Spacer, Player Cabinet Front	
301	PSPAZ9003AGZZ	Spacer, Tape Deck PWB Bracket (Left)	AD
302	PSTPK0005AGZZ	Stopper, Bar Antenna Coil	
	QACCN0001AGZZ	Mains Supply Cord (SEMKO)	AQ
	QACCS9001SE00	Mains Supply Cord (SEV) (Without Plug)	AG
	QACCV0001AGZZ	Mains Supply Cord (KEMA)	AP
	QACCZ0002AG08	Mains Supply Cord (Without Plug)	AF
	QACCZ0002TA0F	Mains Supply Cord (USA type Plug)	AF
	QANTW0054AFZZ	FM Antenna	AL
	QFSHC0003AGZZ	Holder, Fuse (F51)	AD
	QFSHD1001AGZZ	Holder, Fuse (F701, F702, F703)	AB
	QLUGL0201AGZZ	Terminal Strip (3 Pin)	AB
	QLUGL0250AFZZ	Terminal Strip (2 Pin)	AC
	QLUGL0451AFZZ	Terminal Strip (4 Pin)	AD
	QLUGP0104AGZZ	Lug Terminal	AA
	QLUGP0111CEFW	Lug Terminal	AA
	QPLGA0201AGZZ	Plug, Mains Supply Cord (QACCZ0002AG08)	AE
	QPLGA0205AGZZ	Plug, Mains Supply Cord (QACCS9001SE00)	AK
	QPWBF0610AFZZ	P.W. Board, APSS	
	QPWBF0617AFZZ	P.W. Board, Tuner Switch	
	QPWBF0618AFZZ	P.W. Board, Tape Deck Switch	
	QPWBF0645AFZZ	P.W. Board, Power	
	QPWBF0646AFZZ	P.W. Board, Tone	
	QPWBF0647AFZZ	P.W. Board, Tuner	
	QPWBF0648AFZZ	P.W. Board, Tape Deck/ Semi-VR/Lamp	
	QPWBF0649AFZZ	P.W. Board, Tuner Switch	
	QPWBF0650AFZZ	P.W. Board, Touch Switch	